

PANAMA CANAL

WHAT IT IS
WHAT IT MEANS



JOHN BARRETT

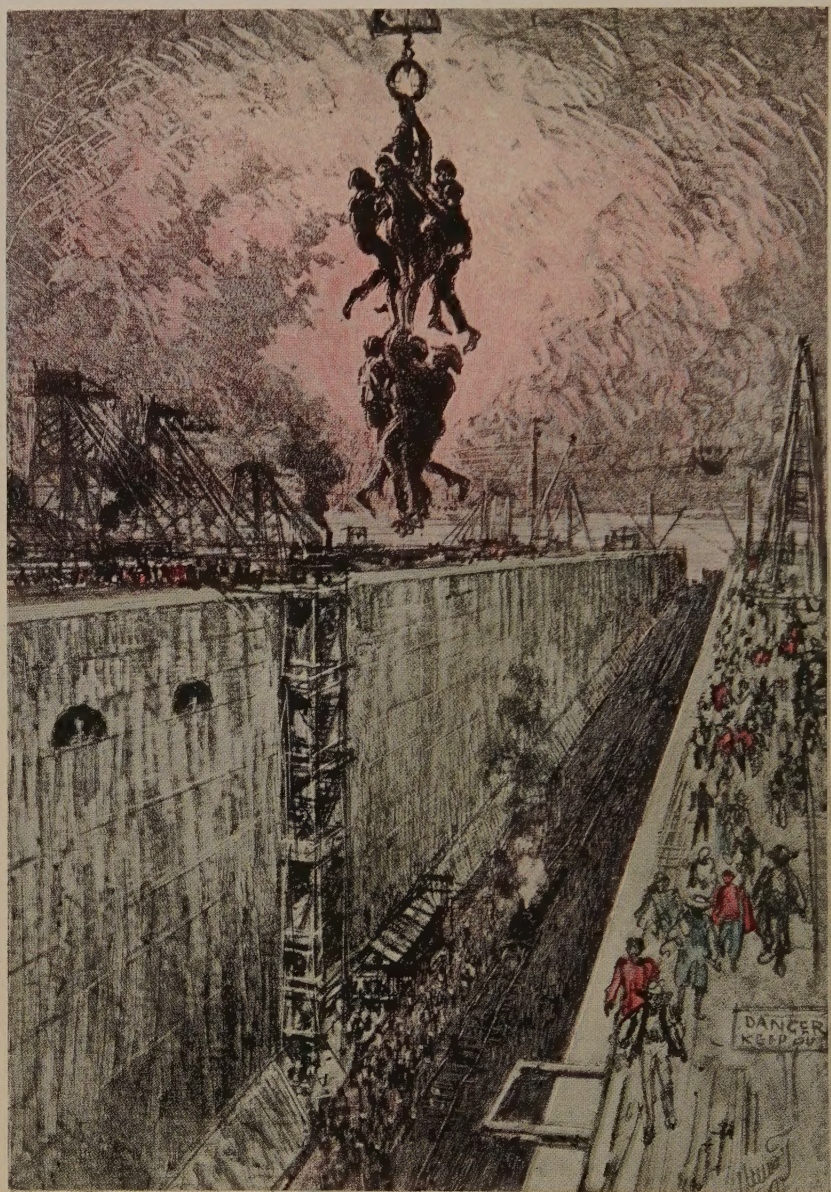
PAN AMERICAN UNION
WASHINGTON, D.C.
U. S. A.

PANAMA
CANAL

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WHAT IT MEANS

To Miss Marie McNaughton
with the personal regards
of the author.

Wm. Barlett
July 20, 1913.



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END OF DAY, GATUN LOCK

This sketch was made by Joseph Pennell while workmen were quitting work for the day
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PANAMA CANAL

WHAT IT IS
WHAT IT MEANS



JOHN BARRETT

DIRECTOR GENERAL OF THE PAN AMERICAN UNION

U. S. Minister to Siam (1894-98); Special Commissioner in Asia (1898-99); U. S. Delegate to Second Pan American Conference (1901-02); Commissioner General to Asia and Australia of the St. Louis World's Fair (1902-3); U. S. Minister to Argentina (1903-4); U. S. Minister to Panama (1904-5); U. S. Minister to Colombia (1905-6); Elected by the Twenty-one American Republics, in 1906, as the Executive Officer of the "Bureau of American Republics" (changed by international agreement to "Pan American Union" in 1910), which position he has since held.

PAN AMERICAN UNION

WASHINGTON, D. C.

U. S. A.

1913

DEDICATED TO
COLONEL GEORGE WASHINGTON GOETHALS
AND HIS FELLOW WORKERS, THE MAN AND MEN
WHO ARE DOING IT

THE Pan American Union is an international organization and office maintained by the twenty-one American republics (the United States and its twenty sister nations: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Salvador, Uruguay, and Venezuela), controlled by a Governing Board composed of the Secretary of State of the United States and the Diplomatic Representatives in Washington of the other American nations, administered by a Director General and Assistant Director chosen by this Board and assisted by a staff of statisticians, compilers, trade experts, translators, editors, librarians and clerks, and devoted to the development of commerce, friendly intercourse, good understanding, and peace among all the American republics.

Purchased at Lakeshore Auction Gallery



FOREWORD

THIS little handbook has been prepared to meet a special demand. The widespread and growing popular interest in the Panama Canal and the great number of persons visiting the Isthmus have caused a heavy call to be made upon the Pan American Union for the information which it contains.

As the Pan American Union is the international organization and bureau of information maintained at Washington by all the twenty-one American republics, including the United States and the twenty Latin American countries, for the purpose of developing greater commerce, better acquaintance, more intercourse, and permanent peace among them, and as the Panama Canal will be a potent influence in accomplishing these ends, it is fitting that such a handbook should be published under its auspices. It should be understood, however, that the Pan American Union is not officially responsible for any errors which may have inadvertently crept into the text or for any opinions expressed or policies advocated in its pages.

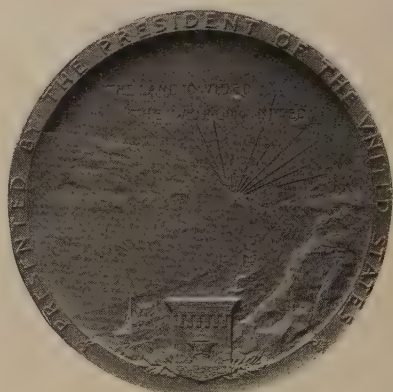
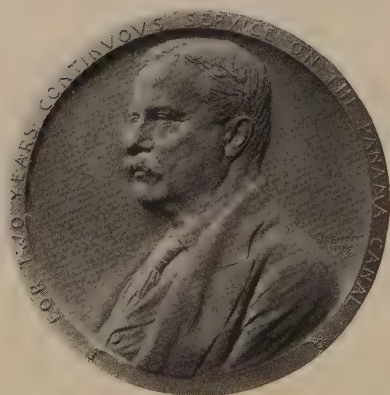
It simply endeavors to answer in compact, succinct form the majority of questions which are asked, not only by those who, unable to go to Panama, desire to know more about the canal and what it means, but by those who, in going there, wish to learn ahead what they will see or confirm afterwards what they have seen. It is also intended to be useful to schools, colleges, libraries, and clubs where classes are being formed to study the canal, its meaning and effect. It should be likewise valuable for general reference.

It has been compiled under the supervision of the Director General of the Pan American Union, who was United States Minister to Panama at the beginning of the work on the canal in 1904-1905, assisting in the diplomatic negotiations establishing the first relations of the government of Panama and that of the Canal Zone. Since then, at other posts and in his present position, he has not only endeavored to follow closely the construction of the canal but to study constantly its possible effect upon the progress and prosperity of the American republics. As he

has also been Minister to two other Latin American countries, Argentina and Colombia, as well as delegate to the Second Pan American Conference in Mexico, and, prior to that service, Minister to Siam in southern Asia, and Commissioner General of the St. Louis World's Fair to Asia and Australia, he has actual acquaintance with the countries and commerce affected by the Panama Canal.

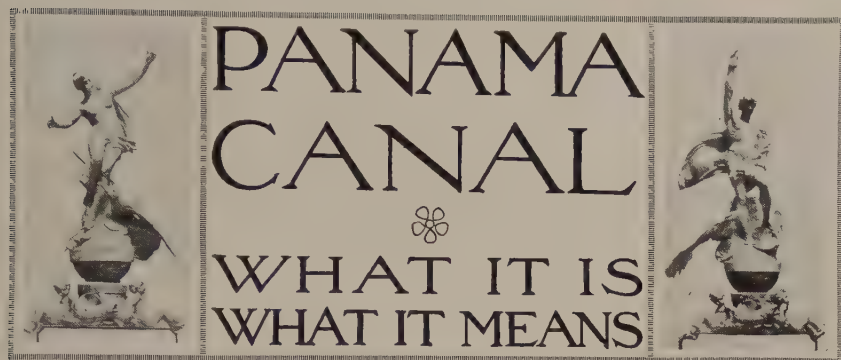
It is impossible within the space limitations of a book of this kind to do full justice to the Panama Canal, what it is and what it means, but as much information as possible of a practical and interesting character has been included.

Without trespassing in any way upon the field of the Isthmian Canal Commission, the Pan American Union has endeavored to meet a popular want of the hour coming under its official attention. It expresses appreciation of the assistance which it has received from the office of the Canal Commission in Washington and of the data obtained not only from the general reports and publications of the Commission and the addresses and articles of Col. Goethals, but from the handbook of the Commission and the Canal Record edited by Joseph Bucklin Bishop, Secretary of the Commission. It is also indebted to William P. Northrup of Buffalo for valuable coöperation in the make-up of the book, and to Joseph Pennell for the use of the frontispiece.



MEDAL GIVEN TO ALL EMPLOYEES ON THE CANAL "GOLD ROLL" FOR TWO YEARS OF CONTINUOUS SERVICE

Left: Head of Ex-President Roosevelt; right: Culebra Cut



JUST where are Panama, the Canal Zone, and the Canal itself? These seem like simple questions and yet few persons can answer them correctly offhand.

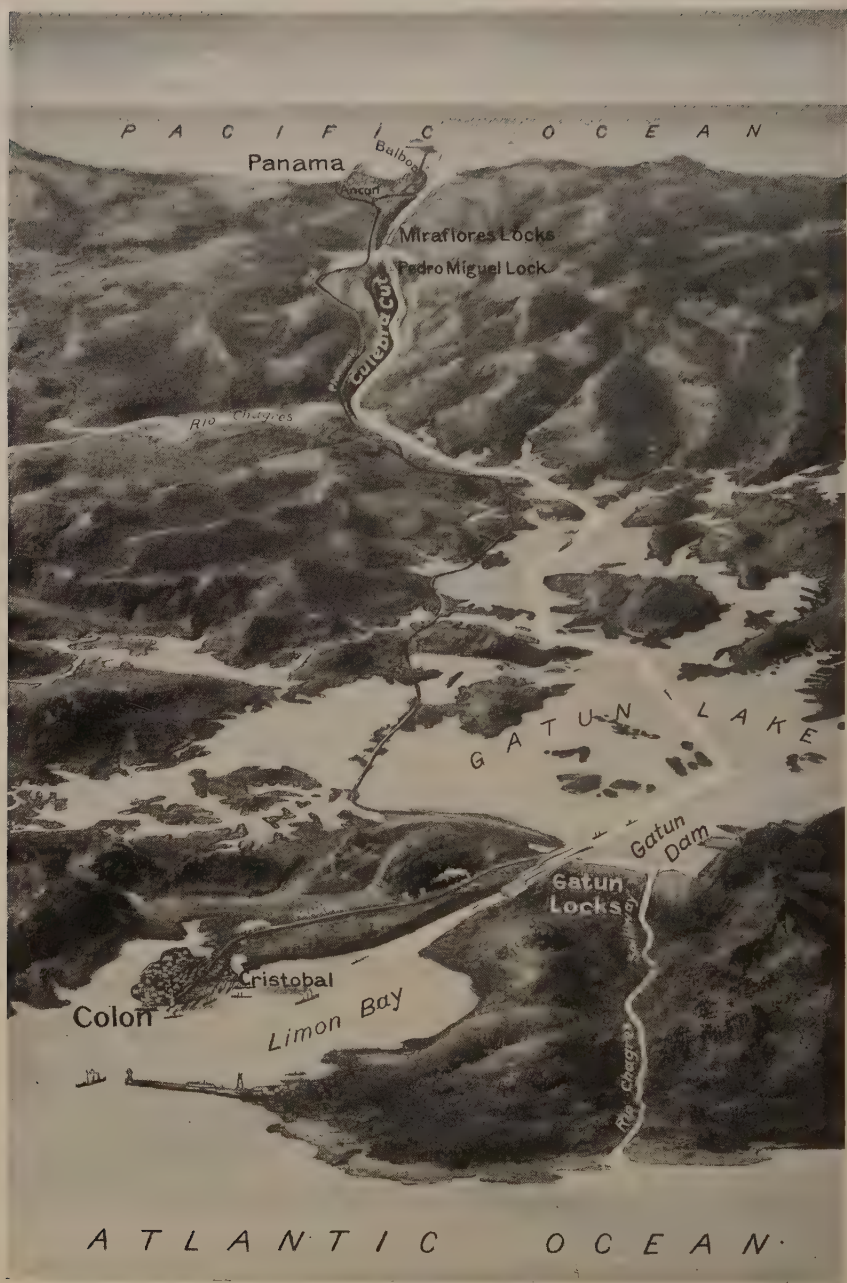
As we nearly all feel the fascination of geography and enjoy studying maps in order to locate the countries and places which we either visit or read about, let us at the start have before us a few plain but interesting facts and figures.

To find the Isthmus of Panama on the map which we carry in the mind's eye, it is well to consider its location in reference to some representative cities or points in different sections of the world.

In its relation to the United States we can best locate it by using a little imagination. New York City is cut by the north and south Meridian of longitude which is 74 degrees west of Greenwich. Washington, the capital, is at 77 degrees. Toronto, Canada; Buffalo, New York; Pittsburgh, Pennsylvania; Charleston, South Carolina; and Palm Beach, Florida, are almost on the line of 80 degrees, which cuts directly through Panama and is coincident with the western boundary of the Canal Zone where it begins on the Atlantic side. In other words, if a plumb line could be dropped 2,000 miles directly south from the top of Pittsburgh's loftiest skyscraper it might, if it swayed a trifle, bump against Col. Goethal's house on Culebra Hill.

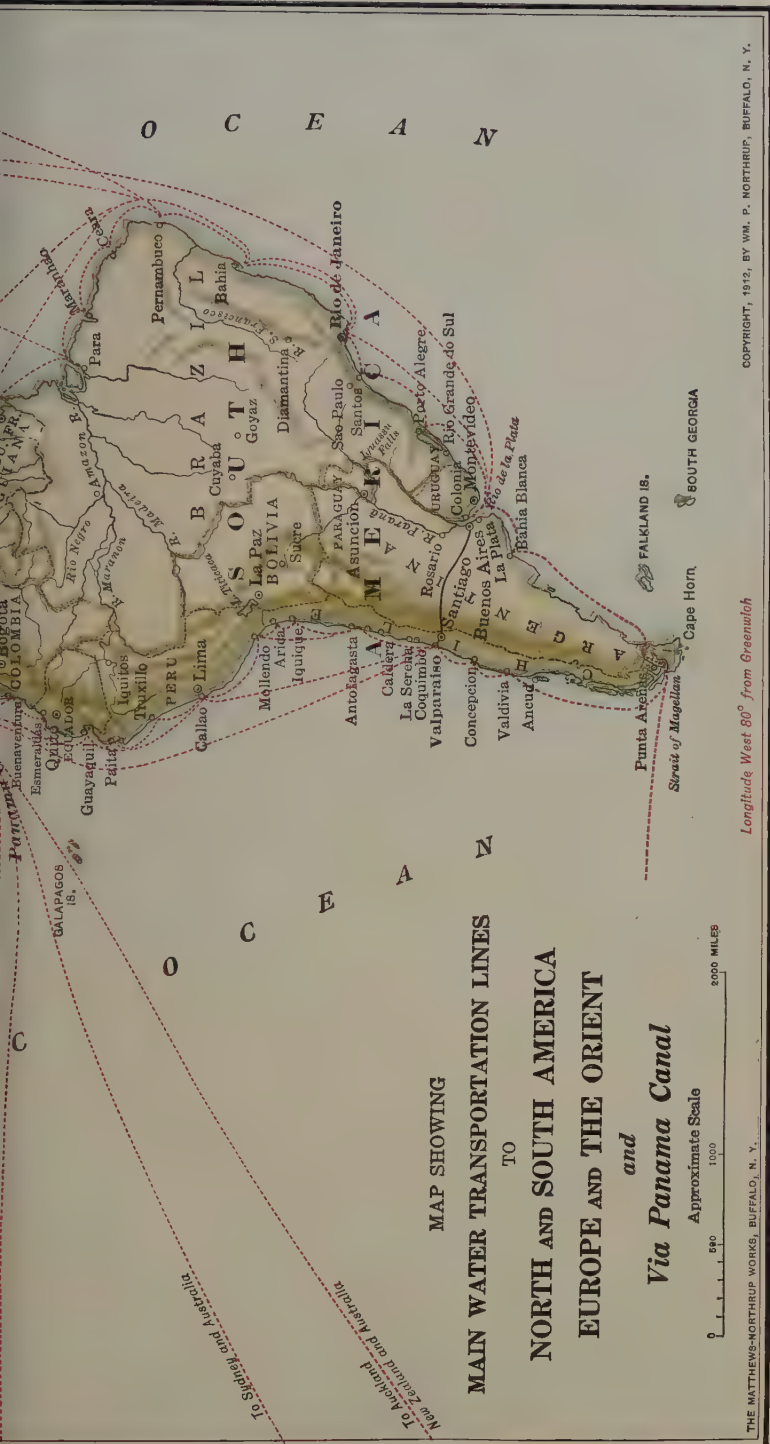
Located by steamer routes, Colon, the Atlantic entrance to the canal, is approximately 2,000 miles slightly west of south of New York, 1,400 miles quite a little east of south of New Orleans, a little less than 1,000 miles almost due south from Key West, and 3,250 miles due southeast from San Francisco.

The two illustrations above are of Isidore Konti's statues, "Spirit of the Atlantic" and "Spirit of the Pacific."



IMAGINARY AEROPLANE VIEW OF CANAL FIFTY MILES LONG FROM
OCEAN TO OCEAN





The above map shows at a glance what the canal means to the transportation routes of the Western Hemisphere and the world. Especially should it be noted that the entire Pacific coast of South America is directly south from the canal and the entire Atlantic coast of the United States. It also shows how the canal actually cuts, at the strategic and commercial geographical center, the Atlantic and Pacific coasts of North and South America.

Traveling direct from England or Northern Europe, Colon is approximately 4,600 miles due southwest. From Yokohama, a vessel to reach Panama on the Pacific side would steam 7,800 miles slightly south of east; from Sydney, Australia, 8,000 miles northwest; from Valparaiso, Chile, on the west coast of South America, 2,600 miles almost due north.

We are so much in the habit of considering "Panama" and the "Canal" practically as synonyms that we do not stop to remember that the Republic of Panama is a country of consequence and has a considerable reach of map lines. Panama as a nation boasts of 32,000 square miles, or an area close to that of either Indiana or Maine. Its extreme length is 430 miles or nearly equal to the distance from Boston to Baltimore. Its average width is 70 miles or equal to that of the State of Massachusetts. It begins at $77\frac{1}{2}$ degrees west on the boundary of Colombia in South America and extends to 83 degrees west to Costa Rica in Central America. It lies between $7\frac{1}{2}$ degrees and $9\frac{1}{2}$ degrees north latitude, or about 500 miles north of the equator.

To understand the peculiar layout of the Canal Zone, a strip of land 10 miles wide from the Atlantic to Pacific through which the canal runs and which is under the absolute control of the United States, we must realize that the Isthmus is not a North and South but an East and West neck of land connecting North and South America, with a northerly or upward turn where the canal crosses. This makes Colon, the Atlantic terminus of the canal, nearly 20 miles west of Panama, the Pacific terminus, and causes the canal to run from the northwest to southeast in connecting an eastern sea with a western ocean! It also gives the traveler or stranger the surprising experience of looking from his Tivoli hotel window at Panama City in the early morning and seeing the sun rise directly before him out of the Pacific Ocean!

The Isthmus is only about 40 miles wide, as the condor flies, from the Caribbean to the Pacific, but the turns of the canal make its channel 50 miles from deep water to deep water. There is one other place between the Bay of San Blas to the east of Colon and the Bay of Panama where the Isthmus narrows to about 30 miles, but the continental divide is higher and the lay of the land not suitable for a canal. The lowest point of the Cordillera, which reach in a majestic barrier for 10,000 miles from



ARCHITECT'S SKETCH OF NEW WASHINGTON HOTEL, FACING CARRIBEAN SEA

the Yukon River in Alaska to the Straits of Magellan in southern Chile, will be at the bottom of the Culebra cut, which, when the canal is completed, will be exactly 40 feet above sea level. And yet not far away in Panama are mountains rising nearly 10,000 feet into the clouds as if to protest against man's humbling of their might with an artificial waterway.

Not far from Culebra is the famous Balboa hill, over 1,000 feet high, from the summit of which it is alleged the great discoverer after whom it is named first saw the Pacific Ocean, September 25, 1513. I would not advise the tourist to undertake to climb this hill even though from the near-by distance it does not look difficult, for the remembrance of my efforts, when I was United States Minister to Panama, to scale its jungle-grown sides made me doubt whether Mr. Balboa ever undertook to climb it except in the mind of the imaginative historians! The way the red bugs for a month afterwards destroyed the peace of my soul as well as irritated my body from their burrowed homes in the flesh of my legs and feet made me also wonder if the experiences of Balboa and his followers in crossing the Isthmus in those days were not conducive to his using swear words when he took possession of the Pacific Ocean in the name of Spain.

Akin to geography are physical characteristics, products, peoples, and climate. To better understand the canal, we must take a passing glance at more details than those already given of

Panama as a country. To do it justice, it is deserving of credit for many other features than that of being the home of the world's greatest engineering undertaking. With a population approach-



POINT TORO BREAKWATER
Atlantic Entrance to Canal

ing 400,000, with an annual foreign trade valued at nearly \$11,000,000, with considerable areas of excellent agricultural land, with extensive forests of valuable timber, with no arid sections, with numerous water-power possibilities, with an interior which needs only railways and highways to permit of a development equal to that of Florida or Louisiana, and with a climate which, owing to the narrowness of the Isthmus, is more salubrious than that of

many countries farther away from the equator, and with a proportion of inhabitants not one-fifth of what it can eventually support, Panama is, indeed, a land of actual attraction and no small potentialities.

It is producing and selling to the United States and Europe, in increasing quantities, bananas, cocoanuts, cacao, or chocolate beans, sarsaparilla, coffee, sugar, pineapples, alligator pears,



DOCKS AND WHARVES AT COLON

medlar juice, ipecac, indigo, ivory nuts (out of which most of our buttons are made), rubber, mahogany, cocobolo wood, hides and skins, pearls and mother of pearl, tortoise shell, etc. Its real mineral wealth has not yet been sufficiently studied and exploited to permit of a positive conclusion, but there are many evidences of the presence of the precious metals in sufficient quantities to pay for their development when transportation conditions are improved. Manganese iron ore and coal deposits have been located, while recent reports indicate that petroleum can also be found. Capital and continued geological investigation alone can actually determine what Panama has in store in these great resources, but frequently, during my stay as American Minister at Panama, samples of minerals, metals, and oil were brought to me from various interior points which caused me to recommend that a thorough geological and metallurgical study should be made of the Isthmus. If oil and coal of good quality can be found there in large quantities, they will add greatly to the popularity and economy of the Panama Canal route.

Panama's chief opportunity which would appeal to foreigners seems now to lie in cattle raising and fruit growing. Along a

large portion of the Pacific side of the Isthmus and in some parts of the Atlantic side as well as in the plateau districts between the two are broad savannas or open areas where cattle easily graze and readily fatten. There is no good reason why Panama should not eventually supply all the meat required by vessels using the canal, as well as by its own increasing population and that of the Canal Zone. Fruit growing, especially bananas and other fruits for which there is such an overwhelming demand in the United States, is proceeding apace and rapidly converting large sections, principally upon



COLUMBUS MONUMENT AT
CRISTOBAL



FRONT STREET, COLON, AND PANAMA RAILROAD TERMINUS

the Atlantic side, which were once malarial and mosquito-ridden, into real gardens and homes of healthy people. With the lessons in sanitation before Panama, which have been taught by the builders of the canal, who have proved conclusively that the tropics can be made healthy, I believe from long official experience in the tropics of both Asia and America that Panama has a prosperous and interesting future ahead of her aside from being the site and environment of the canal.

CLIMATE AND HEALTH CONDITIONS

If the present new hotel conditions at Panama and Colon are continued and enlarged as travel may demand, I see many reasons why the Isthmus should become and always remain a popular winter resort. From the first of December until the end of March the heat is not oppressive if one keeps out of the sun or protects himself with an umbrella or large hat in the middle hours of the day from eleven to three, while the nights are always comfortable at that season. During other months, Panama might not be selected as a resort, but if the traveler or visitor uses a little mental philosophy together with common sense in dressing, eating, and drinking, in reference to the heat, he will be astonished to find how agreeably he gets along, how little he minds it, and how well he keeps. In fact, many persons who hate the heat of the tropics

and revile them during their first experience learn to like them and return to them, attracted forever by their mysterious charm.

If the skeptical individual who reads this will stop long enough on the Isthmus to visit in their homes and come into actual personal contact with the representative men and women serving Uncle Sam in the Canal Zone, he will be surprised at the remarkable health, energy, and cheerfulness displayed by them, provided they have resided there long enough to know the tropics and how to live. Exceptions will, of course, be found, but they are rare. I do not contend for a moment that Panama should or would be selected as a permanent residence in preference to one in the temperate climate, or that in the long run, all things being equal, a man can expect to enjoy life or keep as well and vigorous there as in cooler climates, but I simply want the tropics and Panama to get a square deal! Having spent seven years in the tropics of Southern Asia and America, including many trips of adventure and exploration into pathless jungles, and having never been ill a day from any tropical influence, I may be excused for writing earnestly, but not accused of lack of experience.

There is one mental formula which I advise every visitor to the tropics to remember. It will be an excellent and practical antidote for the heat. It is:

God made it hot in the tropics countless ages ago; it has been hot ever since; it always will be hot; but let us be thankful that it isn't any hotter. All the fussing, fuming, stewing, and worrying about the heat won't make God change it a single degree, but will make us hotter still. Let us, therefore, keep cool at least mentally and we will be surprised to find how quickly in consequence we grow cooler and more comfortable physically.

When our soldiers were making themselves sick in the Philippines worrying about and cussing the heat just after our occupation of the Islands in 1898, I persuaded Gen. E. S. Otis, then Commander-in-Chief at Manila, to issue an informal order containing this formula. The effect was instant and almost magical. The sick and hospital list grew rapidly less and some regiments even so enthused over it that they fined every man a peso who made any reference to the heat, and then used the proceeds to buy electric fans!

Gen. George W. Davis, the fine old soldier and first Gov-



REPUBLIC OF PANAMA

ernor of the Canal Zone; Col. W. C. Gorgas, the courageous premier health provider and yellow-fever destroyer of the Isthmus; and John W. Wallace, the eminent and hard-working first Chief Engineer; and myself as the first United States Minister after the work began at Panama, united in preaching and practicing this doctrine or philosophy when we went to Panama in the early part of 1904, and ever since it has characterized the attitude of all the canal staff, from the great Goethals down to his lowest white subordinate.

A few other suggestions based on practical experience may help the newcomer or first visitor to Panama and the tropics to get along more comfortably than he had expected. With the philosophy outlined above always in mind, let him eat lightly, especially of meats, eliminate drinks with alcohol in them, dress in clothing of airy texture, have at hand brown or blue-glass spectacles or eyeglasses to soften the glare in the middle of the day, wear a wide-brimmed hat, and carry an umbrella — black will do, but white or yellow, lined with green or blue, readily obtainable at Panama, is preferable. Many persons going to the tropics for the first time are troubled with prickly heat. This is largely superinduced by cold baths. Those inclined to this trouble should always take warm or hot baths or rub themselves well with diluted alcohol. They may not be so comfortable at the moment but they will open the pores of the skin and permit free

perspiration. Prickly heat is nothing more than congestion of the pores which starts irritation and itching. Cold baths chill and close the pores and so increase the irritation. Constipation is always to be avoided in the tropics, and a bottle of fruit salts should be in everybody's handbag to be used on the slightest indication of irregularity.

All danger of yellow fever at Panama is absolutely eliminated and the chances of getting malaria are at a minimum, but, if the traveler has a tendency to the latter, regular doses of quinine will usually prove an adequate preventative. If anybody should become suddenly ill during his visit to Panama he need not worry about care and attendance. There are no better hospitals and nurses in New York or London than in Panama and Colon, and the medical attendance is most capable and thoroughly experienced. I have written quite a little about possible sickness because travelers are always discussing it, but the intending visitor to Panama need have even less thought of this than when he travels in the United States or on the continent of Europe.

What about the rainy season? is a common question. Again, here, we find much misconception. The so-called rainy season extends from April to November, but that does not mean that it rains all the time or every day. There are periods when it does rain every day and rains hard, but very rarely, indeed, all day. Even in the heart of the rainy season the sun shines more than it hides and the greater part of the day is rainless. The showers or downpour generally come at almost regular hours and can usually be depended upon to end about when expected. The porous character of the soil and the warmth of the sun have a quick drying effect, which enables people to soon get about and work to go on. These rains are also most welcome in the hottest months of April, May, and June, and often bring a desired coolness, sometimes, however, called mugginess. This reminds me to caution a newcomer in the tropics in regard to mildew. In the rainy season and often in the dry season, on account of the humidity in the air, much trouble is experienced with clothes, and especially shoes and other leather articles, becoming mildewed at night. This can be avoided by thoroughly drying such articles in the sun, or by putting them in a closet or partially

closed trunk or box in which a small oil lamp or some lighted candles, or burning electric light bulbs, are also placed.

A word about the actual temperature at Panama just to satisfy the curious. The mean thermometer for the year is about 80 degrees with extreme fluctuations rarely reaching 15 degrees above or below that mark. It never gets as hot as it often does in New York, Washington, Paris, and Yokohama. At night there is always a drop in temperature which is noticeable and conducive to sleep, but, of course, there are some rooms, corners, and places, where there is no movement of air or a breeze, and it seems close and disagreeable. If one, however, can sleep where there is plenty of air, he will not suffer from the heat. From January to April a fresh breeze blows most of the time and delightfully tempers the air. Riding about at night in a motor or carriage, a wrap is often necessary.

Yes, there are mosquitoes, but thanks to the valiant and never-ending fight of Col. Gorgas and his assistants they are almost a negligible consideration in one's comfort. The adequate wire netting, moreover, that protects hotels and houses keeps away the few stray stegomias and anepholes which may be seeking a feast on your fresh blood.

Speaking of the stegomia, the little insect devil which is responsible for spreading yellow fever, it may interest my feminine readers to know that it is Mrs. or Miss Stegomia and not Mr. Stegomia who does all the harm, and that she wears, as it were, yellow striped stockings ! Deprived, however, of a chance to feed herself upon a person afflicted with yellow fever, she is as harmless as her husband or brother. This is not an argument for or against equal rights or for new styles in hosiery, but a simple scientific fact. If you don't believe it, ask Dr. Gorgas or any of his assistants. The malarial-bearing bird is the anephole, who must, in turn, be inoculated first in order to infect healthy victims. In their case, I believe Mr. and Mrs. Anephole are equally dangerous to society. Don't worry about them, anyway, for neither kind will interfere seriously with the pleasure of your visit to the great canal. If a few stray ones do bother you, a little citronella oil rubbed on the ankles, back of the hands, forehead, and ears will aid in keeping them from biting.



STEAMSHIP SERVICE TO PANAMA

"Victoria Luise," Hamburg-American Line

"Pastores," United Fruit Co.

"Laurentic," International Mercantile Marine Co.

R. M. S. "Oruba," Royal Mail Steam Packet Co.



Steamship "Colon" of the Panama Railroad S. S. Line
Steamship "Grosser Kurfuerst" North German Lloyd

STEAMSHIP SERVICE TO THE ISTHMUS

There are abundant facilities for reaching the Panama Canal from the United States. The best regular service and lines are from New York, New Orleans, and San Francisco. During the excursion season of January to April there are also numerous good boats from these ports and Key West.

The average cost of the trip depends on whether the journey is direct down and back or by an excursion route, and also upon the quality and size of the cabin engaged. The minimum round-trip rate is approximately \$100-\$135; the maximum, \$250-\$400.

It is advisable that the intending visitor to the canal should get in touch with the offices of one of the following lines in order to arrange satisfactory passage:

The Panama Railroad Steamship line regularly runs each week comfortable passenger steamers direct to Colon and return, taking about six days for the passage each way. The two largest boats are the "Colon" and "Panama." Its offices are at 24 State Street, New York City.

The Hamburg-American Line, with offices at 41-45 Broadway, New York City, runs regularly vessels of the "Prinz" class from New York to Colon all the year round, touching at Fortune Island, Santiago, Kingston, Bocas del Toro, and Port Limon. Aside from these, in January, February, March, and April, they put on larger vessels of the type of the "Moltke" and "Victoria Luise" for excursions to the Isthmus, which include stops at Cuba, Haiti, Porto Rico, Trinidad, Venezuela, Jamaica, and other points on the Caribbean. The regular boats take about four weeks for the round trip and the excursion steamers from sixteen to twenty-nine days. This year they will run one excursion vessel from New Orleans in January and February.

The United Fruit Co., with offices at 17 Battery Place, New York City and in New Orleans, have an extensive and excellent service not only from New York and New Orleans but from several other ports. Their best passenger vessels, however, run regularly from New York City and New Orleans. The passage from New Orleans is about two days quicker than that from New York. Their new vessels of the "Pastores" type are 550 feet in length with a gross tonnage of 9,000 tons and special arrangements and facilities for the tropics. They have many different routes and touch at other interesting places aside from Colon.

The Royal Mail Steam Packet Co. have also an extensive service of good boats from New York, including a large variety of tours. Their boats leave regularly, Thursdays or Saturdays, from Pier 13, East River, and their offices are at 32 State Street, New York City. The different itineraries of the vessels that go to Panama include Fortune Island, Cuba, and Jamaica, while some of them touch at the Bermudas, Porto Rico, Barbados, Trinidad, other islands of the Caribbean, Venezuela, and Colombia.

The White Star Line, of 9 Broadway, New York City, runs during the excursion season the "Laurentic" and the "Megantic," large vessels, to the West Indies and Colon, these cruises occupying about three to four weeks.

The North German Lloyd, with offices at 5 Broadway, New York City, runs the "Grosser Kurfuerst" on three excursions in January, February, and March, not only to the Panama Canal but to the West Indies.



TYPICAL EXCURSION SIGHT-SEEING TRAIN OF THE PANAMA RAILROAD

For those desiring to go via or from Palm Beach, Tampa, and other Southern points, the Peninsular and Occidental Steamship Co. will run a large, fast passenger vessel, the "Evangeline," every two weeks, January to April, from Key West to Colon, stopping at Jamaica and Cuba on the return voyage. The Florida East Coast Railway, Henry M. Flagler's great achievement, with office at 243 Fifth Avenue, New York, and the Atlantic Coast Line, 1218 Broadway, will make direct connections with this boat via Key West and Tampa respectively.

The Southern Railway, 264 Fifth Avenue, and the Seaboard Air Line, 1184 Broadway, also make connections via Florida, while the former from the East and the Illinois Central and Louisville & Nashville from the Central West connect with the United Fruit Co. steamers at New Orleans.

From San Francisco, the Pacific Mail Steamship Co. regularly runs every week vessels with good passenger accommodations to the Isthmus, taking about three weeks for the trip one way. Their New York offices are located at 17 Battery Place.

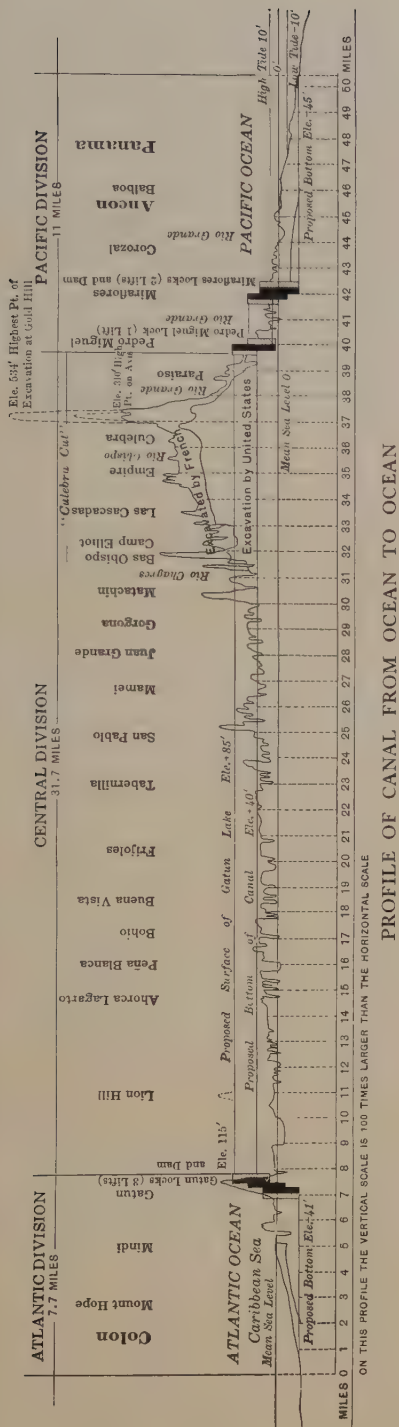
Full descriptive data in the form of pamphlets, time tables, and maps can be obtained from the offices of each one of these lines or from the Pan-American Union, Washington, D. C.

COLON TO PANAMA

On approaching Colon from the north, the first land seen is a range of high hills or low mountains to the south and left, or on the port bow. Coming nearer, the conformation is less irregular and seems to flatten out. Presently, the low-lying buildings and wharves of Colon can be seen to the left with the lighthouse at the water's edge of the town. On the right is Point Toro and its lighthouse with the long breakwater to protect the entrance of the canal, reaching out for several miles and in course of construction. Near the Colon lighthouse looms up the handsome and capacious new Washington Hotel just nearing completion at this writing. In front of it is a great artificial sea-bathing basin or pool, which will prove a strong attraction for tourists. As the steamer turns into its wharf there can be seen at the right the town of Cristobal, which is the port of Colon in the Canal Zone and the home of most of the canal staff located on the Atlantic side. At its western point stands a notable statue of Columbus, which was unveiled by the famous de Lesseps in the days of French control. Just back of it stands the original official residence of the great Frenchman during his brief stay on the Isthmus.

Steamships generally arrive at Colon early in the morning and passengers disembarking find near the wharf the regular or an excursion railroad train which is to take them across the Isthmus to Panama, or to whatever point they may be intending to go. The majority of visitors to Panama come and go on vessels that spend only one night and part of two days at Colon. This time, it should be understood by everybody aboard such steamers, is altogether too short for a complete view and study of the canal, but still it is well worth the journey from afar and enables the traveler to gain a good general idea of this mighty waterway.

The best way to visit Panama, by far, is to come on one steamer, spend a week there, and then return or pass on. A three weeks' absence from the United States on this plan gives an excellent opportunity to become thoroughly familiar with the canal. The time there can then be divided, with two or three days at Colon, including visits to Cristobal, Gatun, and Culebra, and four days at Panama with visits to Culebra, Pedro Miguel, Miraflores,



Balboa terminal and points in and about Panama and Ancon. By stopping at the large comfortable hotels in Colon and Panama, and taking the daily special excursion and regular trains of the well-run Panama railway, the visitor can spend one of the most interesting weeks of his life on the Isthmus, and it will be well worth the trip also in years to come after the canal is completed and in working order.

The traveler who arrives one day and leaves the next generally is taken in a special excursion train across the Isthmus to Panama City, leaving Colon in the morning and returning at night. This train makes stops at the Gatun Locks and Dam and at Culebra, and sometimes at Pedro Miguel and Miraflores Locks with a detour to Balboa, but from Culebra it generally proceeds to Panama City direct. In this case many persons elect to stay over night at the Tivoli hotel or elsewhere in Panama, in order to see that city and its surroundings, and then return to Colon the next day in time to catch their steamer. This possibly is the best way to see the most. Every day, however, extra sight-seeing excursion trains are run either from Panama or Colon which enable



TIVOLI HOTEL, ANCON, NEAR PANAMA CITY

Office Rotunda

Screened Veranda

Dining Room

Front View of Hotel

President's Suite

visitors by a little study of plans to see most that is worth seeing.

In this connection let me say a word about letters of introduction. Don't ask for them and don't present them unless you have some special mission to undertake or errand to execute! Col. Goethals and his subordinates will do all they can for you whether you come with or without letters of introduction, but they will bless you if you don't present any. They are all literally overwhelmed with such letters, and you are simply doing the common ordinary thing when you deliver them. There is every facility for seeing the canal without the aid of letters of this kind and, by presenting them or taking up time to find the officials to whom they are addressed, you may miss seeing much that you want to see and can see just as well without letters. You escape also embarrassing the officials in Washington and others who are continually being requested to provide letters of introduction, but who feel like apologizing to the overworked men on the Isthmus for sending more people to them to worry them and take up the time which Uncle Sam needs for the work.

On these excursion trains go trained lecturers who tell you just what you want to know, and of whom you can ask endless questions; whereas, if you go about with an official he may or may not explain to you what you do not understand and you hesitate to bother and bore him with a lot of inquiries.

If one has time before crossing the Isthmus or after he returns from Panama to go about Colon and Cristobal, he should visit the great plant of the Quartermaster and Subsistence Departments under charge of Col. C. A. Devol, Chief Quartermaster, and Lieut.-Col. Eugene T. Wilson, Subsistence Officer, from which each day go out the food and supplies for 45,000 employes and the stores and materials to keep the vast work proceeding without a break. The homes of the staff located at Cristobal, the Columbus Monument, the Avenue of Palms, laundry plants, the storehouses, the commissary, the busy docks and wharves, are well worthy of inspection. In Colon, the native bazaars and shops are interesting, and in them one can buy cheaply clothes, hats, and anything and everything he needs during his visit to Panama, and some curious things of souvenir character. A ride to the hospital on the east side of Colon is enjoyable and



PANAMA CITY FROM ANCON HILL, LOOKING TOWARD THE PACIFIC
Water Reservoir in foreground. Canal Administration Building at left with new Panama National College just beyond

shows how well equipped is the Canal Commission to care for the sick. The new hotel Washington and its bathing pool will be the Mecca of nearly every traveler. If interested in railways, he may care to inspect the offices and terminals of the Panama Railway Company, of which J. A. Smith is the energetic and capable General Superintendent.

Those who take photographs or wish to purchase them will find several places on the main street running parallel to the railroad where they can get films developed or purchase pictures of the canal and environment. Horse conveyances are in abundance near the wharves and railway station to carry passengers in every direction.

The money in common use is silver, the Panama dollar or peso being exactly equal to fifty cents in United States money, but the latter is readily taken in payment for all kinds of services or purchases. The newcomer should always understand clearly, however, in what money he is dealing, or else he may pay double what is expected and not be told or reminded that he has made a mistake!

If a few days can be spared for a stay in Colon, there are several interesting side trips which can be made. At Mount Hope, formerly known as Monkey Hill, is the famous, or, possibly in view of its history, ill-famed cemetery where are buried large numbers of the Frenchmen and other foreigners who perished by the hundreds during the unsanitary times of the pioneer régime. A view of this is a grim reminder of death's awful charge upon the first effort to build the canal.

If the visitor enjoys seeing old ruins which are really remarkable in their architecture and carry him back almost into the medieval times, he should make a boat trip down the Chagres River from Gatun and inspect the old ruins of Fort Lorenzo at the mouth of the river, which was built by the Spaniards to guard this entrance and command the sea. Vast sums of money were expended in this wonderful construction and it is one of the most interesting ruins of the Western Hemisphere. A whole day can be spent in making this trip with full reward for the effort. The boat ride, moreover, down the river, surrounded on both sides by the tropical jungle and overhanging trees, is an interesting experience.

If it can be so arranged, a trip on one of the Government boats

to Porto Bello, the point on the coast west of Colon where most of the rock is being obtained for the Point Toro breakwater, is worth while, because there can be seen some of the finest old fortifications of the days of the Spanish Conquest. Even the old guns and cannon balls in use in those times still remain upon the bastions. Were these ruins and those of Fort Lorenzo at the mouth of the Chagres River readily accessible, every visitor to the Isthmus would feel that they were alone deserving of a trip all the way from New York to see.



ANCON HILL AND HOSPITAL VIEW FROM REAR OF HOTEL TIVOLI
Baseball ground in foreground

In driving and walking about the clean, well-paved streets of Colon, it is difficult to imagine what the place looked (and smelled) like eight years ago when the United States began the cleaning up of Colon and Panama. The whole town was a pest hole, except a small section at the northeast end under the practical control of the railroad. Slimy, stagnant water backed up under most of the buildings and the streets were mud holes in the rainy season. It was, indeed, a most discouraging place and scene for the eyes of us pioneers to look upon when we arrived on the Isthmus in those days of early 1904 which literally tried



STREET SCENE, PANAMA CITY

men's souls. Yellow fever, Chagres fever, and malaria dominated the situation. Now all is changed through the instrumentality of sewers, waterworks, paving, and general sanitation—and skilled administration.

Colon is a cosmopolitan place and in its 15,000 population can be found representatives of nearly a score of peoples and languages. It reminds one much of Port Said without the offensive criminal, immoral, and gambling characteristics of the entrance to the Suez Canal. Cristobal, its zone neighbor, could be regarded as a model town in any state or country, and is excellent evidence of wise American direction and administration.

The only towns or settlements deserving of a special visit apart from the canal between Colon and Panama are those at Gatun, Gorgona, Camp Elliot, and Camp Otis, Empire, Culebra, Paraiso, Corozal, and Balboa, and these can be omitted if the time is limited. The chief things to see in them are the neat, well-arranged, well-kept houses, offices, barracks, school buildings, hospitals, and shops. Everything is orderly, clean, suggestive of system, work, and health. Frills are entirely lacking except in the form of pretty flower gardens and other exterior or interior ornamentation done by the deft hand of some wife, mother, or daughter. The whole atmosphere and effect are those of business



WATER POWER AWAITING DEVELOPMENT AT CHORRERA, PANAMA

but not of discomfort. The Young Men's Christian Association houses provide reading rooms and clubs for a considerable element of the staff. These have facilities for billiards, pool, bowling, checkers, and dominoes, and light drinks. There are several women's clubs and other social and literary organizations of both sexes which are often meeting. Dances are held frequently and well attended. So far Col. Goethals has issued no order against the "turkey trot" or the "tango," and it is whispered that sometimes he lets up in his seriousness and trips a few steps as nimbly as his son!

Baseball is as popular in the Canal Zone as it is in New York or San Francisco, and there are clubs galore from Cristobal to Balboa. During the cooler months the championship of the zone is fought out with as much seriousness as the recent conflict for the World's Championship between the Giants of New York and the Red Sox of Boston. Basket ball and tennis are also popular and have a considerable following. Band concerts by the Isthmian Canal Band are given at different points on different days, moving picture shows are constantly exhibiting, and occasionally there are good dramatic or vaudeville entertainments.

There is also real "society" on the Isthmus. Teas, dinners, and receptions are given which, in the quality of the personnel, the good looks and cleverness of the women, the "doing-things" quality of the men, compare favorably with similar gatherings in Washington and New York. The male element does not have much time for "playing" in society and it is too tired when night comes for late-hour festivities, but on appropriate occasions and at necessary intervals it does its part handsomely. The large army of prominent visitors constantly arriving increases greatly the number of social functions. Certainly, no person who has friends or acquaintances on the Isthmus ever lacks attention, and everybody from the members of the Commission down the line is liberal and kindly in his or her hospitality.

Of the places connected with the canal and figuring prominently in any story relating to it, Panama City is the most important and interesting.

With a cosmopolitan population of 40,000, with a romantic history going back four centuries, with ancient walls and bastions still standing in its limits, with old half-ruined churches of rare architecture yet in evidence, with quaint houses and narrow streets mixed with modern construction and well-paved avenues, with hotels, office buildings, and lottery offices dating back to the French days contrasting with new private and public structures and palaces erected in the recent days of the Americans, with all varieties of stores, shops, curio haunts, run or patronized by all classes and types of men and women, and withal a picturesque location on a peninsula extending into the Pacific and backed up by a splendid guardian hill called "Ancon," Panama never fails to interest the traveler and student.

Comfortably housed at the Tivoli hotel, the visitor can easily spend several days at Panama seeing the sights and resting between his trips to various points along the canal.

What is there to see at Panama City is frequently asked by those who cross the Isthmus and spend a day in the capital of the little Republic.

There is really much to see if one is really interested and has the time. Back of the hotel Tivoli is noble Ancon Hill, on whose slopes are the beautiful grounds and capacious buildings of Ancon Hospital, while nearer at hand are the airy and well-built offices

and homes of the civil administration, judiciary, law, and sanitation staff. Looking in an opposite direction towards the Pacific and the Bay of Panama one can discern in the distance the graceful ruined tower of "Old Panama," which should be the objective point of a motor trip. Recently, the Government of Panama has cleared away all the jungle and undergrowth which obscured the remains of the buildings, plazas, and streets of this rich and wicked capital of the old days which was destroyed by the Buccaneer Morgan in 1671.

En route to "Old Panama" one passes along and through the "Savannas," which is an open, rolling country close to the sea and the site of the country homes of the richer Panamanians. A good automobile road reaches the entire distance of several miles. It requires two hours to make the trip comfortably and satisfactorily. If en route you are fortunate enough to be entertained at luncheon or tea by some hospitable Panamanian, you will come away with a high opinion of the quality and refinement of your host and his family. The average visitor to Panama sees little or nothing of the high-class native life and can not appreciate what a considerable well-educated, much-traveled, and socially-refined element of people it possesses. During my stay of one year at Panama before the American colony had reached its present large proportions, I saw much of the home life of the native families and gained a most favorable impression of their social activities. I remember a social picnic and dancing club, which had a membership of over one hundred young ladies, called the "Club Iris," and I am frank to say that I know of no similar club in any American city that could get together more real pretty girls in the same membership.

On the other hand, I have keen and pleasant recollections of many men in and out of the government of Panama, in both private and public life, whose friendship and fellowship I cherished. I was particularly impressed with the number of clear-headed, logical-minded, and common-sense acting men I constantly met in my official life, and who were honestly desirous of helping Panama become a government worth while and develop a name for stability, order, and progress.

Panama suffers from the class of visitors who make only flying visits to the Isthmus and, coming into contact with only one



OLD CATHEDRAL, PLAZA INDEPENDENCIA, PANAMA CITY

class—the cab drivers, policemen, and small shop-keepers, and ordinary workmen — return to the United States or Europe and write stories about the “Spigotties,” as the average lower class is commonly described by the American canal employes, as if they were the only people at Panama.

A drive around Panama, or a walk if one has time, should include visits to the Cathedral on the main square, Plaza Independencia, the Lottery Office, the old French office or administration headquarters, the Hotel Central, and the new municipal

building, all facing the same plaza. Not far away, on a side street, is the American Legation, which was the home of the Chief of the Canal in the French era, and where at the present writing (December, 1912) presides the Hon. H. Percival Dodge, an able and hospitable minister. On another near-by street, overlooking the bay, is "La Presidencia," the residence of the distinguished President of the Republic, Dr. Belisario Porras, with an attractive little Spanish patio. Beyond and near the sea is the magnificent new National Theater or Opera House, and the new government



NEW PANAMA CITY MUNICIPAL BUILDING, PLAZA INDEPENDENCIA

building or National Palace, both structures which would ornament any large city of the United States or Europe. The American Consulate General, now in charge of Consul General Alban G. Snyder, is on the main street leading from the railroad station to the main plaza.

The far and long-famed "Flat Arch," in the ruins of the old San Domingo Church, should be seen by every traveler and student. This is said to be the longest flat arch in the world, and having been built two centuries ago it is a monument to the

architects and masons of those days. There is a legend that the architect, after having designed several arches which fell, planned and built this one and then, sitting under it called upon it to fall and destroy him or last forever! Perhaps its greatest usefulness is to answer by its simple presence and long existence all arguments, dire predictions, and false prophecies of those who contend that the locks and heavy work of the canal are in danger of momentary destruction by earthquakes.

Other churches of interest are San Felipe de Neri, the oldest in Panama; San Francisco, in Plaza Bolivar, and having also a flat arch and big doors with old-fashioned nail heads; Santa Ana in Santa Ana Plaza; San José, with old Spanish altars on Avenue A; and de la Merced, Avenue Central.

The old sea-wall and fortress at Chiriqui Plaza, called "Las Bovedas," is one of the really picturesque sights of Panama and commands a comprehensive view of the Bay of Panama and the whole water front. Near by are up-to-date clubs of Panamanians and Americans, which make a marked contrast to these old buildings of the times when social clubs were not in vogue.

The market place on the water front, the Chinese shops, the Panama hat stores, the bird and monkey shops, the offices of the pearl merchants, and the curio shops provide abundant opportunities for the traveler to part with his money, with the result that when he returns to the hotel he engages in a long argument with his cab driver, in order to save enough to pay his hotel bill when he leaves that night or the next morning. And he will dislike to leave the Tivoli, for it is a comfortable and hospitable place—with allowances, of course, for limitations in space and attendance when great crowds from an incoming excursion steamer temporarily swamp its corridors and facilities.

A motor or carriage ride to Balboa, the Pacific terminus of the canal, only a few miles away, is worth while. The road is a good one and an opportunity is provided, if not already enjoyed by the excursion train, to inspect the docks, buildings, and the work which is going on at that end of the canal. One branch of the road goes by the native and Chinese cemeteries, which are unique to the average foreigner and worth seeing. If in going from the Tivoli hotel the road is taken along the shoulder of Ancon Hill, a fine view is obtained of Panama City, the bay, the breakwater



FAMOUS FLAT ARCH, RUINS OF SAN DOMINGO CHURCH, PANAMA CITY

in course of construction which will connect Balboa with Naos Island, and the channel of the canal leading out to sea.

In going to or returning from Balboa, or in a separate excursion, a ride should be taken around the northern slope of Ancon Hill, where a fine panoramic view can be had of the route of the canal in the direction of Miraflores, Pedro Miguel, and Culebra Cut. This view also gives an excellent impression of the general land conformation of the Isthmus and makes one clearly realize the engineering difficulties which have been surmounted.

If a stop of several days is made at Panama, a trip should be made by water across Panama Bay to Taboga Island, famous for its wonderful pineapples and for its attractive sanitarium or rest house for convalescing invalid employees. A round-trip day's steaming also, almost to the south, which could be undertaken in a large steam launch or a specially chartered tug, permits a visit to the well-known Pearl Islands, where profitable pearl fisheries have been conducted for a great many years, enriching the native fishermen and the merchants in Panama.

A launch ride from Panama out through the bay around the islands and up the Pacific channel of the canal to Balboa gives

an excellent idea of the Pacific approach to the canal and the location of the fortifications which are to protect this entrance to the great waterway.

If several days are spent at Panama, at least one of them should be reserved to be used for a special visit to Culebra, an inspection of the construction and engineering administration building with its relief map of the canal and its model of the locks, which are explained by an experienced lecturer, a look at the hotels and homes of the employes, the Y. M. C. A. building, as showing the welfare work, and an intimate view of the famous Cut itself. The Pedro Miguel and Miraflores locks might be included in this excursion but are better saved for another day. Balboa, with the construction of terminal wharves, a dry dock, repair shops, coal deposits, warehouses, and supply depots, will be an interesting point during the next two years, while on the canal side of Ancon Hill near Balboa will presently be built the permanent main administration building of the canal and the zone.

At Ancon, a day can be instructively spent in visiting the civil administration building and its various offices to see how the work is carried on, the schools to note how the young American transplanted to the tropics is taught "to shoot," the hospitals



NEW NATIONAL PALACE OR PANAMA GOVERNMENT BUILDING, PANAMA CITY



FRENCH ADMINISTRATION BUILDING, PANAMA CITY

Photograph taken fifteen years ago

to learn how carefully the sick or injured are doctored and nursed, the police and fire department to be convinced that life and property are both well guarded, and the courts to hear real justice dispensed and the law respected.

If the traveler is fortunate enough to be invited to the homes of any of the officials at Ancon, Culebra, or elsewhere, he will not only enjoy the call, lunch, or dinner, but have an opportunity of observing first-hand the interior of remarkably comfortable and sanitary houses usually made delightfully attractive and hospitable by the deft touch and finesse of the women members of the family. If he is at the Tivoli on the night of a ball, he will see men, women, and young ladies of such bearing, character, looks, and dress that he would be proud to class them as coming from his own home. Very few anemic faces or tropical complexions will catch the eye.

If he will take time to watch both men and women playing lawn tennis, riding horseback, walking, or otherwise playing in their hours of recreation, he will discover few signs of tropical enervation. If, moreover, he should be invited to join in a friendly game of bridge, he will soon find out that the tropical climate does not lessen the skill of the canal staff or of the feminine contingent who like the game there as much as they do in New York or Washington.

CONDENSED FACTS AND FIGURES

A few live facts and figures, not too dry and statistical, but interesting and instructive, should be given at the beginning of the chapter describing the actual canal.

They answer a multitude of questions without the necessity of hunting through numerous pages to find them. They have the effect, at the same time, of whetting the mental appetite for more facts.

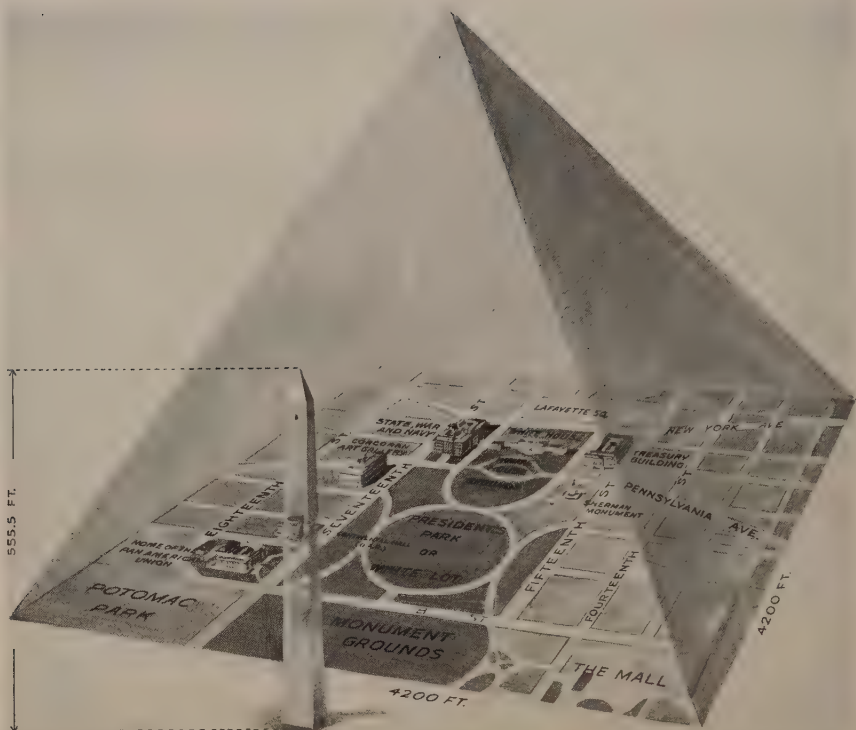
What follows before taking up the more extended details is based on the admirable official handbook of the Isthman Canal Commission, which is compiled by the experienced writer and efficient Secretary of the Canal Commission, Joseph Bucklin Bishop.

When a steamship leaves the deep water of the Caribbean Sea and enters the channel of the canal at Colon it will travel just 50 miles before it reaches deep water of the Pacific. The actual air line, however, from shore-line to shore-line is only 40 miles. This vessel, if it proceeds directly through without delays, will require only from 10 to 12 hours for the passage. Of this time, 3 hours will be occupied in being lifted and lowered through 6 locks, 3 at Gatun, 1 at Pedro Miguel, and 2 at Miraflores.

These locks are arranged in parallel pairs. There are, therefore, 12 locks in all. Each lock chamber is 1,000 feet long and 110 feet wide. Their concrete walls vary from about 50 to 90 feet in height, according to location, and the gates or leaves of the locks have corresponding dimensions.

The minimum channel width at bottom is 300 feet through Culebra Cut; the maximum is in Gatun Lake, 1,000 feet. The average depth is 45 feet, though in part of Gatun Lake it will be 85 feet. This lake has a surface of 164 square miles and the greatest limit of its reach is 32 miles. The Gatun dam forming the lake is $1\frac{1}{2}$ miles long, $\frac{1}{2}$ -mile wide at its base, and 115 feet high at its crest.

The day Col. Goethals, the great chief of administration and construction, says the work is done, over 212,000,000 cubic yards of earth and rock will have been excavated by the Americans since May 4, 1904. The French excavated approximately 80,000,000 yards, but only 30,000,000 were utilized by the Americans. The actual total excavation for the present canal will,



This diagram is a striking illustration of the vast volume of excavation at Panama

therefore, be nearly 242,000,000 yards. This would be equal to a tunnel or subway 13 to 14 feet in diameter through the 8,000 miles of the earth, or build a pyramid like that pictured above!

The concrete used in the locks, spillways, dams, etc., will approximate 5,000,000 cubic yards. This would build a wall 12 feet high, 8 feet thick, for 266 miles, the distance from New York to Washington.

The Panama Railroad is 47 miles long from Colon to Panama. Its relocation caused by the lake and excavations cost \$9,000,000.

The total cost of the canal, including payment to the French Company of \$40,000,000 and to the Panama Government of \$10,000,000, is estimated at \$375,000,000. The value of the work done by the French is placed at about \$25,000,000 and the value of all French property at nearly \$43,000,000.

About 35,000 to 40,000 have been the average number of men

at work on the canal. Of these about 5,000 are Americans. The latter form what is called the "Gold roll," as they are paid in United States money. The remainder, largely Jamaica negroes, form the "Silver roll," and are paid in Panama silver currency.

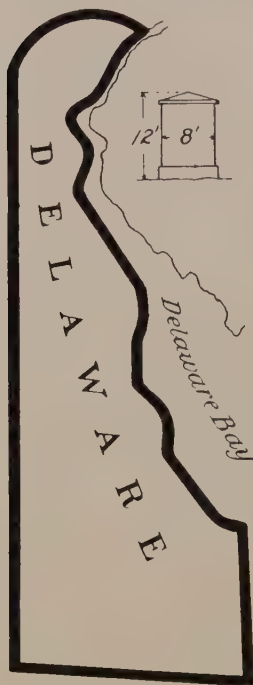
The Canal Zone is a strip of land 10 miles wide, 5 miles on either side of the center line of the canal channel, reaching from deep water of the Atlantic or Caribbean to deep water of the Pacific. It covers an area of 448 square miles and by treaty with Panama is under the sovereignty and complete control of the United States Government.

The administration of this zone and the direction of the canal work rests in the hands of an Isthmian Canal Commission, authorized by Congress and appointed by the President, of which Col. George W. Goethals, U. S. A., is Chairman and Chief Engineer. His instructions give him almost autocratic power which, however, he uses most wisely and effectively. He is assisted by the following other members of the Commission,



When the canal is completed, 242,000,000 cubic yards, including used French excavation of 30,000,000 yards, of earth and rock will have been excavated. The same amount of excavation would make a tunnel fourteen feet in diameter, 8,000 miles long, through the very heart of the earth, sufficiently large to permit the passing of a New York subway train.

all of whom are men of exceptional ability and experience: Col. H. F. Hodges, U. S. A.; Lieut.-Col. D. D. Gaillard, U. S. A.; Lieut.-Col. Wm. L. Sibert, U. S. A.; Civil Engineer, H. H.



Five million cubic yards of concrete are being used in the construction of the Panama Canal. This is equal to a wall eight feet thick, twelve feet high, and 266 miles long. Such a wall would reach around the State of Delaware, as shown by the above diagram.

Rousseau, U. S. N.; Col. W. C. Gorgas, U. S. A.; and Maurice H. Thatcher. The Secretary of the Commission, already mentioned, is Joseph Bucklin Bishop, who is also editor of the weekly, eight-page Canal Record, which publishes the official orders, gives reports of progress of the work, and other useful information.

For the future administration and government of the canal, provision has been made in the Panama Canal Act of August 24, 1912, which reads:

"That when, in the judgment of the President, the construction of the Panama Canal shall be sufficiently advanced toward completion to render the further services of the Isthmian Canal Commission unnecessary, the President is authorized by executive order to discontinue the Isthmian Canal Commission, which, together with the present organization, shall then cease to exist; and the President is authorized thereafter to complete, govern, and operate the Panama Canal, and govern the Canal Zone, or cause them to be completed, governed, and operated through a Governor of the Panama Canal, and such other persons as he may

deem competent to discharge the various duties connected with the completion, care, maintenance, sanitation, operation, government, and protection of the canal and Canal Zone."

The Governor is to receive a salary of \$10,000 a year.

The date which may be possibly set for the first vessel to pass through is September 25, 1913, the 400th anniversary of the discovery of the Pacific Ocean by Balboa, although it is possible that Col. Goethals with characteristic modesty and caution may make an unannounced test "with any old boat" before that date.

Vessels carrying cargo and passengers, other than those engaged in the coast-to-coast trade of the United States, passing through the canal after it is opened to traffic, will, in accordance with the President's proclamation of November 13, 1912, pay a toll of one dollar and twenty cents (\$1.20) on each net vessel ton — each one hundred cubic feet of cargo or earning capacity. For instance, a vessel of 5,000 net tons will pay \$6,000 for each passage. Vessels in ballast will pay 40% less; naval vessels, that is, actual men-of-war, will pay fifty cents (\$.50) per displacement ton; army and navy transports, colliers, hospital supply ships, one dollar and twenty cents (\$1.20) per net ton, like cargo and passenger vessels.

Professor Emory R. Johnson, the noted statistician and Special Commissioner on Panama traffic and tolls, in his report, on which the President based his proclamation, estimates that the total tonnage of ships using the canal during 1915 and 1916 will be 10,500,000. At an average of 4,000 net tons each, this would mean that 2,625 vessels would pass through the canal the first year, or a daily average of seven. The total net tonnage of the Suez Canal in 1911 was 18,000,000.



STEAM SHOVEL AT WORK



GATUN TRIPLE LOCKS, SHOWING ENTRANCE FROM ATLANTIC SIDE

Cofferdam across entrance to permit finishing of work in lower lock chambers

WHAT THE CANAL ACTUALLY IS

Now let us consider just what the canal is. What are its subdivisions? What are its principal features? What is to be chiefly noted by the visitor to the Isthmus or the stay-at-home who really wants to get a good idea in his eye and mind of the canal? In reading this chapter the illustrations and map on pages 10, 29, and 122 should be consulted.

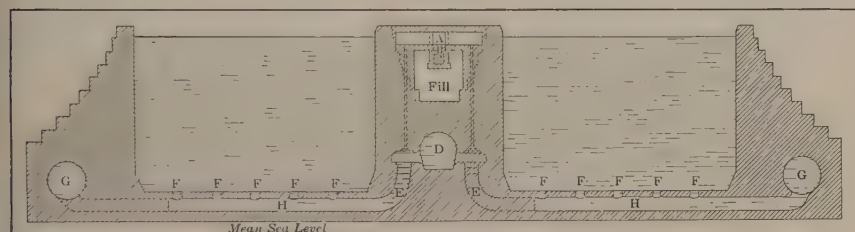
Beginning at the Caribbean deep-sea-bottom contour of 41 feet near the end of the Point Toro breakwater, the canal is dredged directly south through Limon or Colon Bay 5 miles to the regular shore line and thence about 2 miles through low-lying land, almost in a straight line, to the entrance of the Gatun locks. Throughout this sea-level distance of seven miles the channel will have a minimum depth of 41 feet and a width of 500 feet, but this will be widened off Colon and Cristobal for anchorage and dock purposes.

The Point Toro rock breakwater at the entrance of the canal will be 11,700 feet, or over two miles in length, 15 feet wide at the top and 10 feet above sea level, and cost \$5,500,000. It is an absolute necessity to protect the canal and shipping against the fierce northers which sometimes blow with typhoon energy.

At Gatun there will be two parallel sets of locks of three flights each, which will lift vessels from sea level to the 85-foot level of Gatun Lake and Culebra Cut, with an average raise of $28\frac{1}{3}$ feet at each flight. These will be the largest, most wonderful, and most interesting locks in the world, and will make a thrilling picture when they are first in action, as it were, and enable the "Oregon" to accomplish in eight hours in 1913 the journey which required a month in 1898.

These locks, built entirely of concrete, are too big to fully grasp at a glance, but their dimensions enable us to partially measure them. Each will be 1,000 feet long and 110 feet wide in the clear. The total length of the Gatun flight with approach walls will be over 3,500 feet or nearly two-thirds of a mile and the entire width about 300 feet at the top. The massive side walls will be 81 feet high, 45 to 50 feet wide at the floor level and then gradually taper to 8 feet at the top. The huge middle or separating wall will be 60 feet wide, carrying near its base a great central culvert, through which the water, rushing, in turn, into smaller or lateral

branch culverts under and up through the floors of the locks, will flood each chamber and float the passing vessels. This main central culvert, extending the entire distance of the lock, will be 18 to 22 feet in diameter and could hold a Mogul locomotive while the laterals would make an easy driveway for a two-horse truck wagon. There are also culverts in the two side walls of corresponding size, so that an entire lock can be filled or emptied, using one culvert, in 15 minutes and 42 seconds, and, using two culverts, in 7 minutes and 51 seconds. This will be extraordinarily quick work considering the enormous size of the locks, but will provide quick passage for ships. These culverts are also so arranged and controlled by valves that the water from one lock can be used to fill the one below it or the one alongside of it.



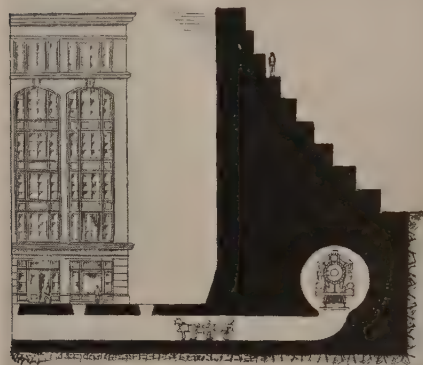
CROSS SECTION OF LOCK CHAMBER AND WALLS OF LOCKS

- A Passageway for operators. B Gallery for electric wires. C Drainage gallery. D Culvert in center wall.
 E These culverts run under the lock floors and alternate with those from sidewalls. F Wells opening from lateral culverts into lock chamber. G Culvert in sidewalls. H Lateral Culvert.

The locks are built in parallel pairs for reasons both of safety and expedition. If one set is out of commission, the other can be used. If vessels are coming up in one set, others can be descending in the parallel set.

The lock gates or leaves almost overwhelm one with their magnitude and majesty. The layman wonders how they can be safely and successfully manipulated. The individual leaves of the gates vary in height from 45 feet 7 inches at the end of the upper flight or third level to 79 feet at the beginning of the first flight or level. They are 7 feet thick and 65 feet long. Two sets of gates separate the high level from the lower level as protection in case one set is damaged by a collision with a vessel or otherwise put out of use. A huge chain is also dropped in front of the gates, made of such size and strength that it could check a ship of 10,000 tons moving at five miles an hour.

For absolute safety still another remarkable precaution is provided. At the head of each flight of locks are emergency dams, consisting of swing bridges, which in case of an accident can be



SECTION OF WALLS AND CULVERTS OF LOCKS

Compared to a six-story building, a railroad locomotive, and a two-horse conveyance

drawn across the locks. From these swing bridges wicker girders are let down. They, in turn, are supported by a sill at the bottom and the horizontal truss-work of the bridge at the top. These wicker girders act as runways for gates which are lowered and gradually stop the flow.

In each lock are intermediate gates forming lesser lock chambers of 600 and 400 feet length, respectively, to take care of the great

majority of vessels and to save the necessity of filling the whole 1,000 feet of the regular locks.

Ships will not be allowed in either of the locks under their own steam, but will be towed from one end to the other by specially designed powerful electric motor locomotives running on tracks laid along the central and side walls of the locks. There will be two of these motors in front on either side and two behind, so that they will have absolute control of the vessel. The electricity which will not only operate these motors but all the gates and valves of the canal will be generated by water turbines located at the spillway of the Gatun Dam.

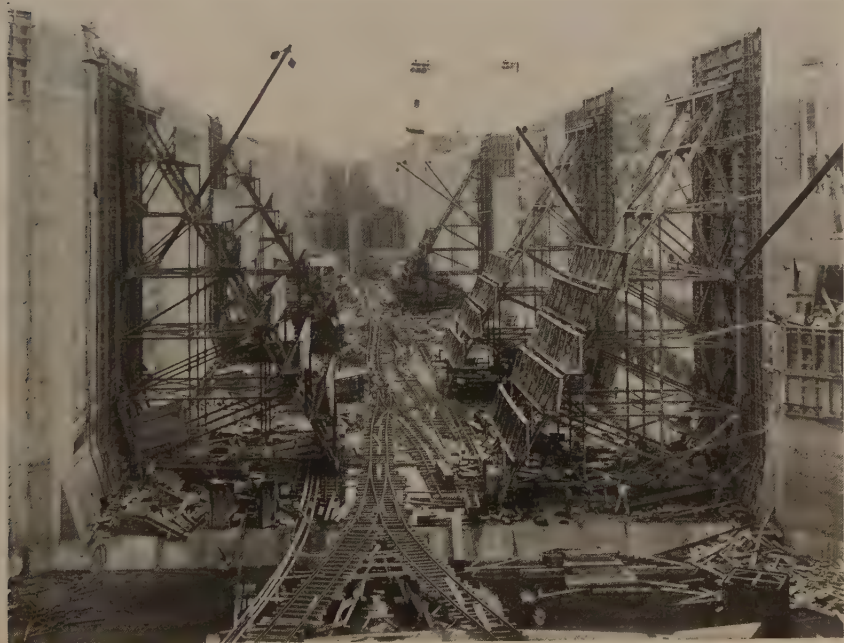
To pass a vessel through the three locks at Gatun will require about one and one-half hours or 30 minutes to each lock. Estimating on this basis, the average ship will require 3 hours to pass through all the locks of the canal, while the time required for the vessel to go from tide-water of the Atlantic to the Pacific is estimated to be from 10 to 12 hours, according to the size of the ship and the rate of speed at which it can travel. This is a remarkably short period of time considering the ponderous mechanism employed and the distance that is saved. It is an inter-

esting contrast that a vessel in going from Colon to Panama in 12 hours accomplishes a journey which made around South America would take from 30 to 45 days.

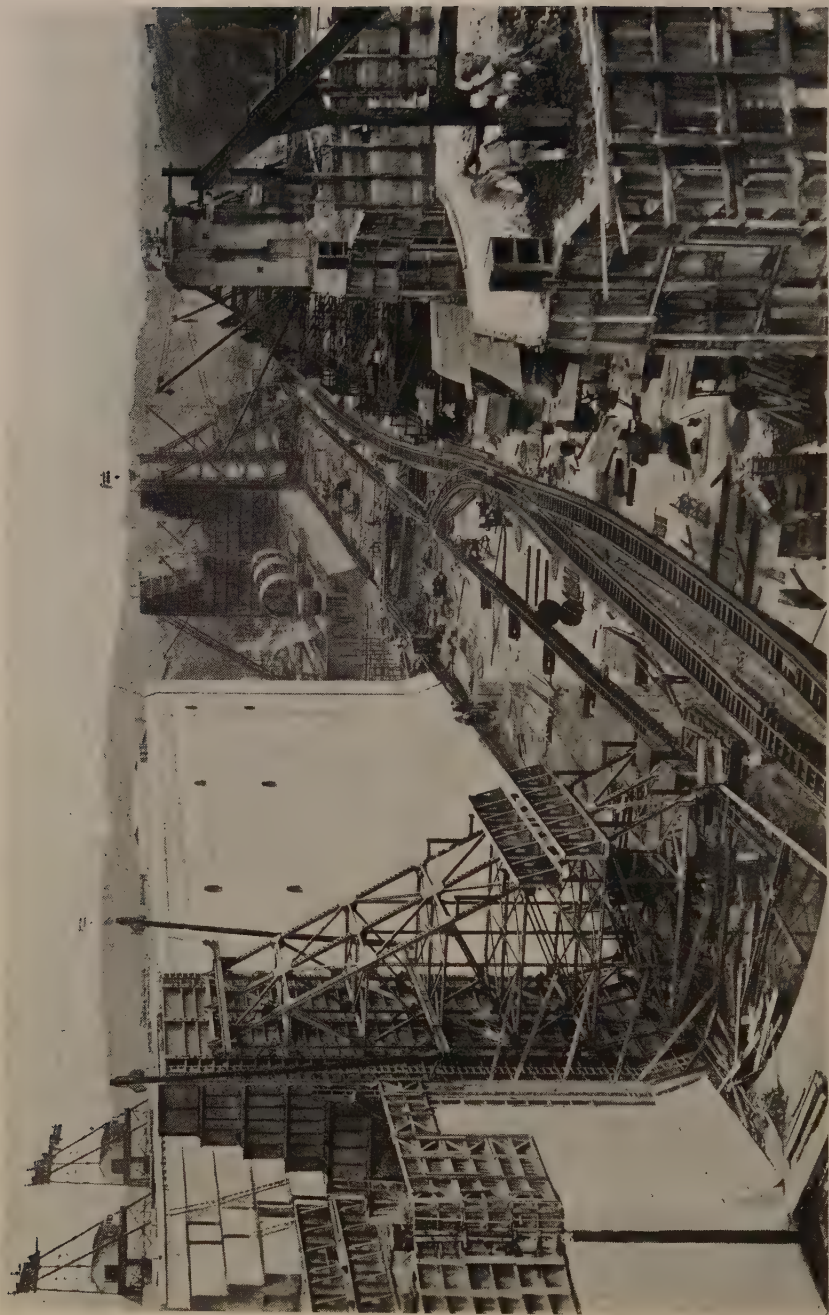
Before we leave the Gatun Locks, one fact should be remembered as giving another idea of their magnitude. Over 2,000,000 cubic yards of concrete have been required to construct them. This would make a wall 8 feet wide and 12 feet high 133 miles long, or half way around the State of Delaware, while all the concrete used in the construction of the canal, between 4,000,000 and 5,000,000 cubic yards, would completely enclose that State with a wall of these dimensions and be able to impound the largest fresh-water reservoir in the world.

All suggestion or speculation that these and the other locks might be some day destroyed by earthquake is unwarranted. They are as solid and eternal as the hills of Panama. Concrete construction of this kind, as proved at San Francisco, is earthquake proof.

Possibly the most interesting feature of the canal at Gatun is not the great triple flight of locks but the wide-world discussed



LOOKING SOUTH, SHOWING THREE FLIGHTS OF LOCKS, GATUN



GATUN LOCKS IN EARLY COURSE OF CONSTRUCTION

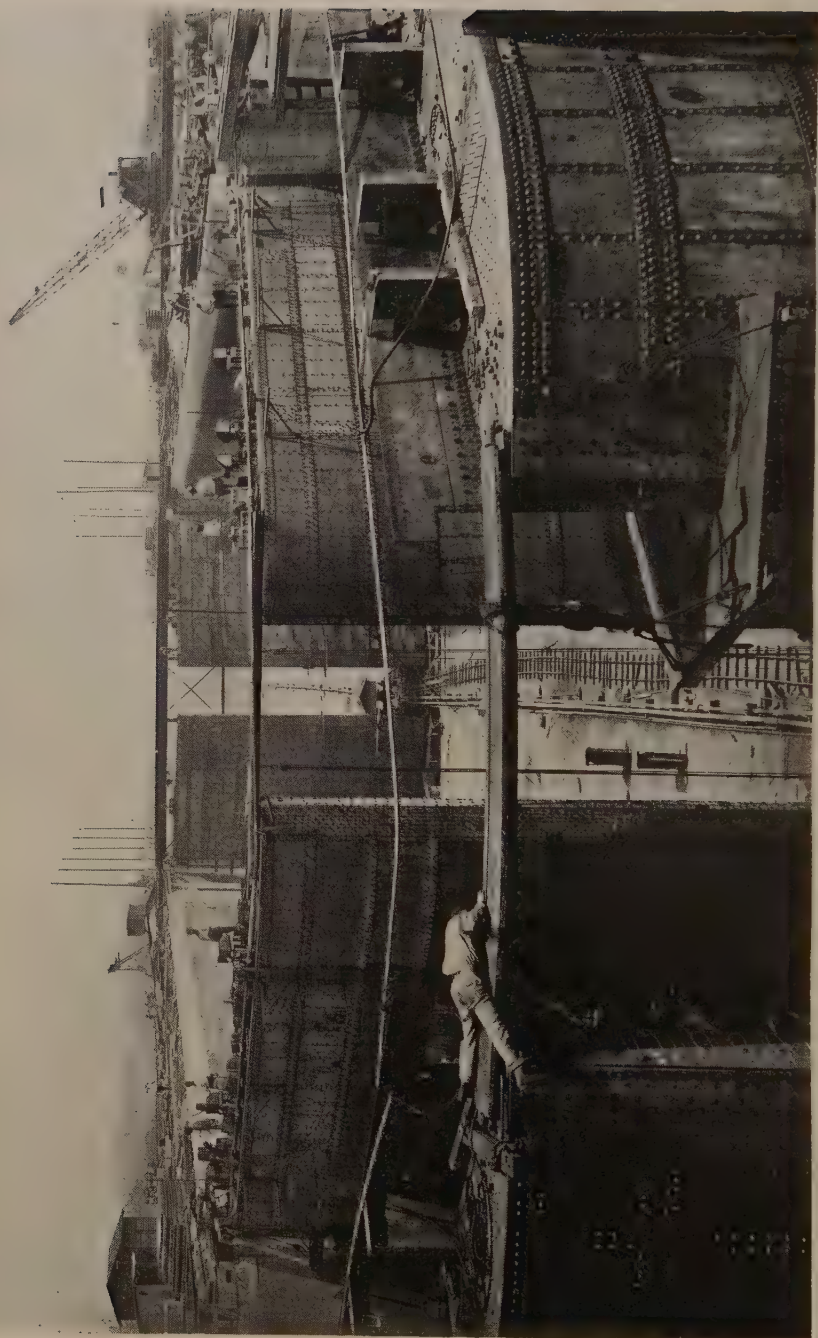
Gatun Dam which extends across the valley from the locks to the hills on the west and forms the Gatun Lake, in which the water will be backed up 32 miles to the Pedro Miguel lock on the Pacific side of the canal. No feature of the canal has been more argued about, pro and con, than this dam, and yet when the visitor to the Isthmus sees it for the first time he is overwhelmingly disappointed. He looks in vain for what he has always pictured in his mind to be a dam and he sees nothing but apparently a low-lying hill with gradual slopes having in its center a small concrete cut and dam called the spillway and intended to take care of the overflow of water from the lake.

In order to fully understand this description of the Gatun Dam, the outline diagrams on page 52 should be carefully studied. This dam or rock and earth embankment, to describe it correctly, is nearly 8,000 feet or $1\frac{1}{2}$ miles long measured on its crest, about 2,100 feet or $\frac{1}{2}$ mile wide at its base, approximately 400 feet wide at the water level, 100 feet wide at the top, which will be at an elevation of 115 feet above sea level, or 30 feet above the mean level of the lake.

To construct this dam "toes," or, in the layman's language, the lower edges of the slopes, were first built of broken rock brought from Culebra Cut, making two walls along the whole length of the dam about 1,200 feet apart. The spaces between were built up with a hydraulic fill of impervious clay material pumped in by pipe-line dredges, which gradually dried and hardened into a solid mass as the water drained off, and left a barrier almost equal to concrete in its capacity to resist water and stand the strain of the lake pressure.

That the building of this dam was no small undertaking is appreciated when it is realized that it contains 22,100,000 cubic yards of rock and earth, or a quantity of material equal to about one-tenth of the total excavation for the entire canal. While it was necessary for the engineers to remove a mountain at Culebra they have had to build another in order to dam the Chagres River and provide the water for the Gatun Lake.

The spillway in the center of the dam is a very important feature of this work. Fortunately, nature had left a small hill of solid rock in the center of the valley. Through this hill the spillway has been constructed so that there is no danger of its



GATUN UPPER LOCKS, WEST CHAMBER, LOOKING NORTH

ever being washed away. Its floor and side walls of concrete are securely anchored into this rock hill. The spillway of the dam will have its solid crest at an elevation of 69 feet, but piers $8\frac{1}{2}$ feet wide were built on top of the crest and grooved for gates which will close the openings and complete the upper portion of the dam.

When the spillway gates are raised to the full height, they will permit a passage of 140,000 cubic feet of water per second. This water will pass through a diversion channel into the old bed of the Chagres and flow out to sea. About 250,000 cubic feet of concrete have been used in the construction of the spillway. Below it will be placed the great power plant containing the turbines which, run by the water coming from the overflow of the dam, will provide all the electricity and power required for the entire canal.

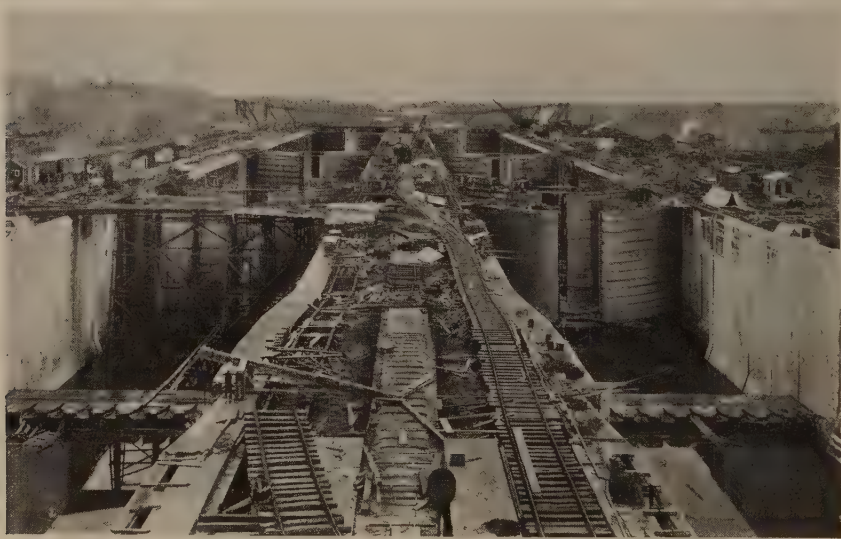
Gatun Lake itself with its surface 85 feet above sea level will be a beautiful inland basin of fresh water covering an area of 164 square miles and containing 206,000,000,000 cubic feet of water! Draining a watershed comprising 1,320 square miles, it will be dotted with numerous islands and surrounded by rolling hills, which will provide a picturesque passage for steamers passing from ocean to ocean. Being of fresh water, it will serve to clean the bottoms of vessels befouled by long journeys through salt water.

The chief source of supply for the water of Gatun Lake is the famous Chagres River, whose old bed crossed the canal 31 miles from the Atlantic entrance and 23 miles from the Gatun Dam, flowing from the northeast to the canal, which it struck nearly at right angles and then took its course almost due northwest to the point where it empties into the Atlantic Ocean. During 8 or 9 months of the year the lake will be kept constantly filled to its capacity and, consequently, a surplus will need to be stored for only 3 or 4 months of the dry season. During the rainy season, the water surface will be maintained at 87 feet above sea level, making the minimum channel depth of the canal 47 feet. As navigation can be carried on at about 41 feet of water, there will be stored for the dry season nearly 6 feet of water. Making due allowances for evaporation, seepage, leakage at the gates, and power consumption, this would be ample for 40 passages

daily through the locks using them at full length, or about 58 lockages a day when partial length is used as would usually be the case. This would permit a larger number of passages of ships than will probably ever be required.

The one all-convincing reason why a sea-level canal was not attempted was the difficulty of controlling the resistless and relentless floods of the Chagres River. This moody and inconsiderate stream has a record of raising $25\frac{1}{2}$ feet in 24 hours, and it can be easily imagined what would be the effect on a sea-level canal of a torrent like this pouring into it. By constructing a high-level canal and impounding a great lake, the Chagres can do its worst and practically have no bad effects except to deposit some silt, which can be easily removed by the large dredges always ready for operation in the lake. If the Chagres poured its greatest flood continually for 5 hours and 20 minutes into the lake it could raise it only one foot in that time, and this, in turn, could be immediately counterbalanced if necessary by lowering the gates at the spillway of the Gatun Dam.

From the Gatun Locks through the lake to Tabernilla, a distance of about 16 miles, the channel of the canal will have a width of 1,000 feet, and vessels can proceed at almost full speed. From Tabernilla to Mamei the channel will be 800 feet wide;



LOOKING NORTH THROUGH UPPER LOCKS, GATUN

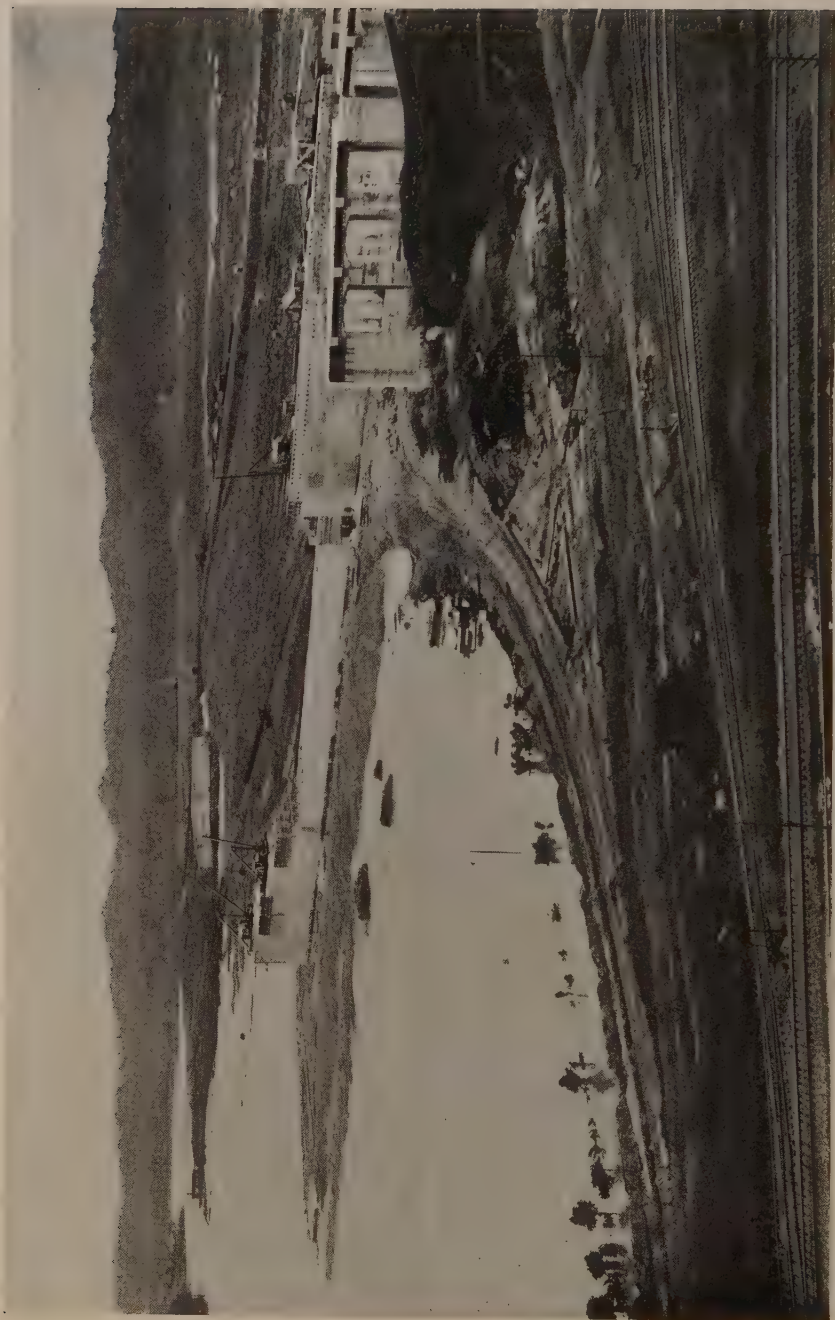


INSPECTING GIANT GATES AT GATUN LOCKS
Major Von Herwarth (in white, second from right end),
German Military Attaché, and John Barrett (second from
left), Director General of the Pan American Union.

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from Mamei half way to Gorgona, 700 feet; from there to a point near where the Chagres River strikes the canal, 500 feet; and then for nearly 9 miles through Culebra Cut to Pedro Miguel, 300 feet; from Pedro Miguel Lock to Miraflores Locks and thence to deep water and Panama Bay, 500 feet wide. These widths prove beyond question that the canal will be amply wide for the largest vessels which will ever use it to pass. The maximum width will be 1,000 feet, the minimum 300 feet, and the minimum depth, 41 feet.

After passing through the lake the most spectacular section of the canal is reached—the Culebra Cut. Although this nominally extends over 9 miles from Gamboa to Pedro Miguel Lock, the really fascinating and overwhelmingly interesting portion is the two or three miles through the summit of the continental divide, lying between Gold Hill on the east and Culebra Hill on



LAKE AND UPPER ENTRANCE TO GATUN LOCKS
With dam reaching from locks to opposite hill, concrete spillway in the center

the west. Here the canal is almost a scenic canyon, a mighty, august, and impressive artificial gorge dug by the hand of man operating regiments of steam shovels, batteries of drills, armies of railway dump cars, and exploding millions of pounds of dynamite. When the stranger first glances at this yawning fissure, looks down into its noisy depths, and then has pointed out to him the imaginary line where the crest of the hill was originally connected, he marvels at what has been done in the last eight years.

Incidentally, when he has pointed out to him how much the French excavated, he cannot help also admiring their achievements and their persistency in the face of overwhelming odds. In fact, despite all the unfortunate memories connected with the French effort to build the canal, the impartial student of the history of this waterway cannot refrain from doing honor to a large body of French engineers and workmen who did their best to dig the canal and bring real honor to the name of France. They are not to be blamed but rather to be pitied because certain men and influences connected with the financing of the undertaking pursued methods which handicapped and finally ended without success their labors and sacrifice. Altogether they excavated along the line of the canal nearly 80,000,000 cubic yards, of which nearly 30,000,000 have been utilized in the present adopted plan of the canal.



SPILLWAY OF GATUN DAM IN CONSTRUCTION

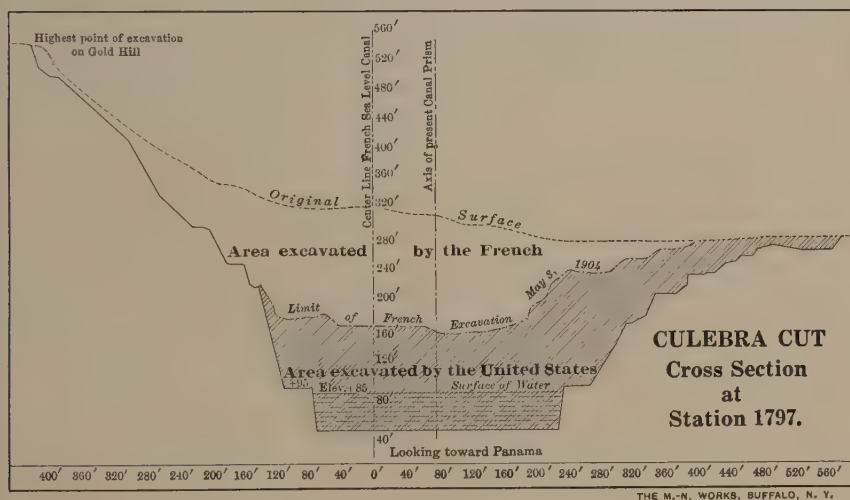


LOOKING NORTH THROUGH CULEBRA CUT, SHOWING POINT OF DEEPEST EXCAVATION
Gold Hill on the right. White line shows original conformation, 300 feet at central point above final bottom of cut

When the canal is finally completed the total excavation will represent 242,000,000 cubic yards of rock and earth, of which 212,000,000 will have been done under American control since early in 1904. In the Culebra section, approximately 106,000,000 cubic yards will have been excavated, or practically half of the entire American work. This total has been much increased by the numerous slides which have taken place along the precipitous slopes of the Culebra section. These, however, are not a serious or lasting menace to the canal and will be removed without delaying the date of the opening of this waterway. After the canal is completed, even though they continue to some extent, the dredges will be able to keep the channel clear while the water itself will act as a resistance to further slides. To fully realize the magnitude and difficulty of the work through the Culebra section, the visitor to the canal should try either to ride or walk through it and see the shovels, spoil trains, drills, and laborers at work. The impression made upon him will never be forgotten.

The Culebra section is terminated by the Pedro Miguel locks, which, with a small earth dam about 1,104 feet long, having a concrete core wall connecting the lock and the high ground to the westward, and having its crest at an elevation of 105 feet above mean sea level, forms a small lake and bay. The locks at Pedro Miguel have only one flight, with a lift or descent of $30\frac{1}{2}$ feet.

Two miles south of the Pedro Miguel locks are the Miraflores





LOOKING NORTH AT CUNETTE, SHOWING APPROACH TO CULEBRA CUT

locks, consisting of two flights with a combined lift or descent at mean tide of $54\frac{2}{3}$ feet. Connecting the Miraflores locks with a high ground on the other side are two dams impounding a small lake about two square miles in area, with a surface elevation of 55 feet above mean sea level. The dam to the westward will be of earth about 700 feet long with its crest 15 feet above the water. The east dam will be of concrete about 500 feet long and having a spillway with crest gates similar to those at Gatun Dam.

Both the single flight of locks at Pedro Miguel and the two flights at Miraflores are constructed and operated in the same manner as the locks at Gatun, differing from them slightly in some lesser dimensions of gates, sills, etc.

From the entrance to the lower flight of Miraflores locks, the canal proceeds at sea level with a channel 500 feet wide, 8 miles long, to the deep water contour of the Pacific Ocean. This latter point is almost directly opposite the four little islands in Panama Bay, Culebra, Perico, Flemenco, and Naos, on which are being constructed the powerful fortifications to defend the Pacific entrance.

Where the canal meets the shore line of the sea is Balboa, the Pacific terminus of the great waterway, about two miles west of

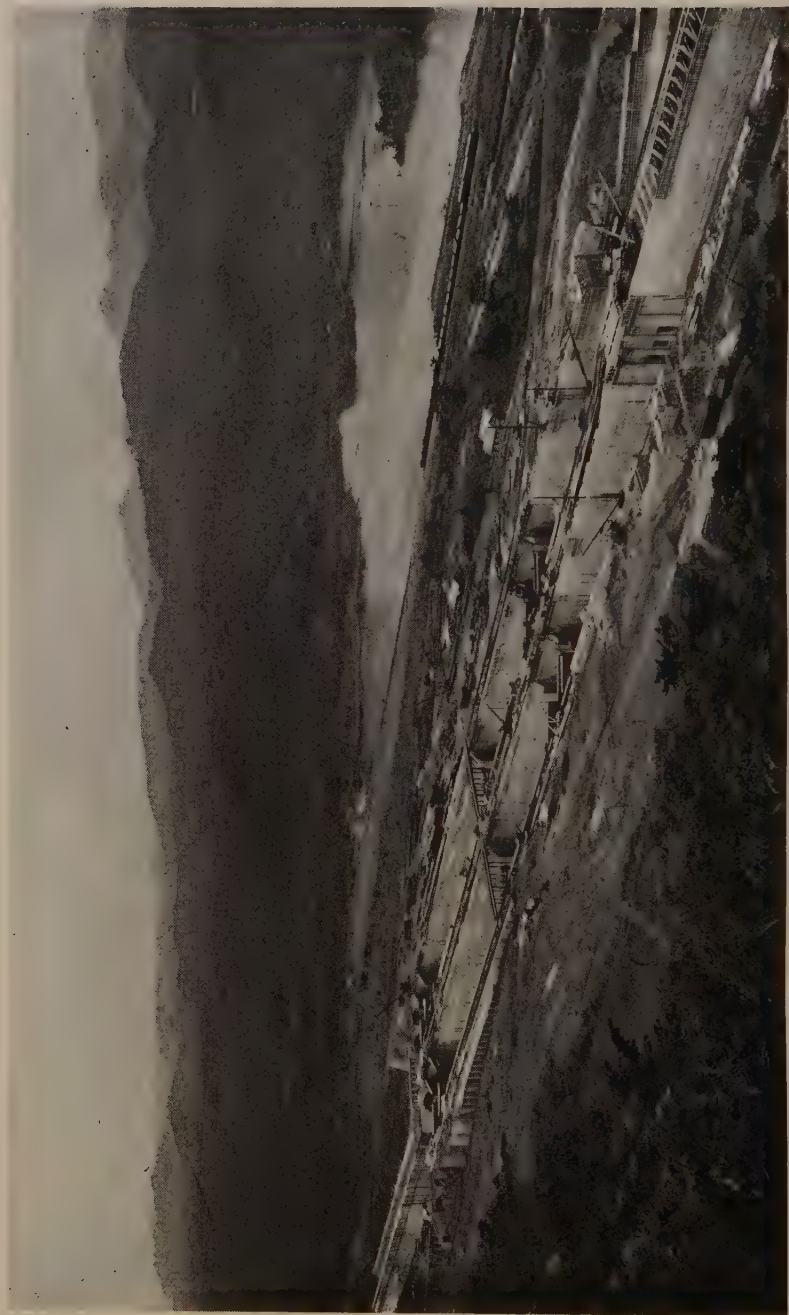
Panama City, and the site of the extensive wharves, warehouses, coal deposits, and large dry dock included in the canal plan. From Sosa Hill, just back of Balboa, out to the island of Naos, extending over 17,000 feet, a little more than 3 miles, is a breakwater constructed of the spoil brought from Culebra Cut. It will be parallel to the axis of the canal and protect it from being silted up by the waters of Panama Bay.

All along the line of the canal wherever there is a change in the direction of the channel are range lights in gracefully built lighthouses that look strange, indeed, towering up through the jungle and on the land of the Isthmus away from the sea with the thought of which lighthouses are always associated.

The Panama Railway parallels the canal from Colon and Cristobal as far as Gatun. From there it formerly ran all the way close to the line of the canal, but on account of the lake overflow and the slides in Culebra Cut it has been relocated for a distance of nearly 32 miles from Gatun to Pedro Miguel. At present an old section from Bas Obispo to Pedro Miguel on the west side of the canal is operated because of the necessity of reaching the towns and stations like Culebra, Empire, and Gorgona; but when the canal is completed these tracks will be



GIGANTIC SLIDE ON WEST BANK NEAR CULEBRA



BIRD'S-EYE VIEW OF PEDRO MIGUEL LOCK AND APPROACHES

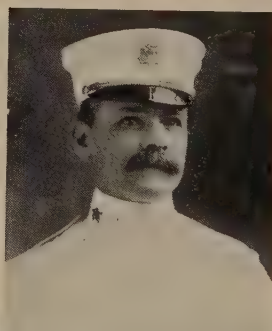
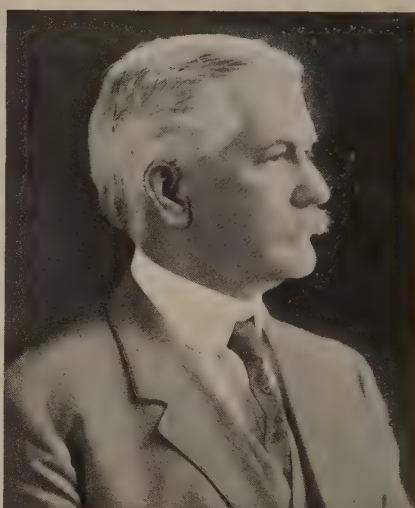
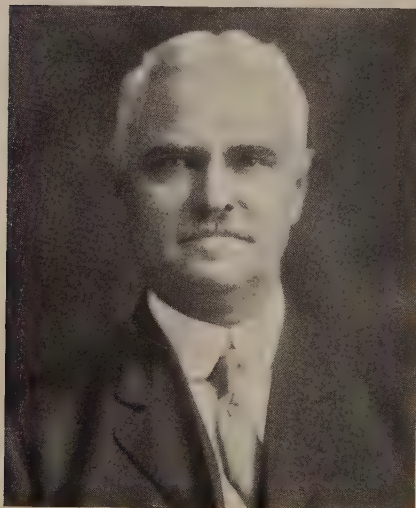
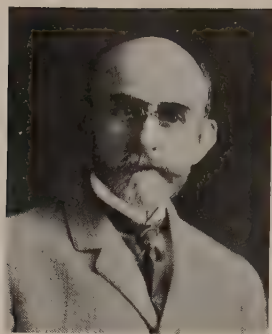
Though this view is impressive, this lock has only one lift, while Miraflores has two, and Gatun three

removed and these towns deserted and allowed to grow up into jungle, with the main line of the road running back of the hills on the east side of the canal. This relocation obviates any necessity of bridges or crossings which might handicap the passing of vessels. The whole roadway is an example of the highest-class construction, and the main road, though limited in mileage, is operated with the skill of a great system. When it is considered that it is interlocked everywhere with all the side and switch tracks used by the canal dump trains, it is remarkable how smoothly it is run without mixups, collisions, or accidents. Its one peculiarity, compared to the roads of the United States, is its exceptionally broad or 5-foot gauge. Its rolling stock compares favorably with the best roads of the United States.

As to the time of completion and use of the canal I quote from a circular issued recently by the Commission: "While the official date of opening has been set for January 1, 1915, it is the intention to allow vessels to utilize the canal just as soon as practicable. Present indications seem to bear out the opinion * * * that this can be accomplished during the latter half of 1913, although it is too far in advance at this time to fix any definite date. Shipping interests will, however, be advised as soon as the Commission feels assured that vessels can be passed without unnecessary delay."



MIRAFLORES LOCKS IN CONSTRUCTION AND APPROACH FROM PACIFIC SIDE



THE CANAL COMMISSION

JOSEPH B. BISHOP, *Secretary*

COL. GEO. W. GOETHALS, *Chairman*

LIEUT.-COL. H. F. HODGES

LIEUT.-COL. WM. L. SIBERT

LIEUT.-COL. D. D. GAILLARD

MAURICE H. THATCHER

COL. WM. C. GORGAS

H. H. ROUSSEAU

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ORGANIZATION AND ADMINISTRATION

The wonderful organization and administration of the canal and the Canal Zone, which Colonel Goethals and his efficient staff have developed, is one of the most interesting features of a study of the Isthmus. This administration includes departments of construction and engineering, subsistence, quartermaster, civil administration, judiciary, law, sanitation, disbursements, examination of accounts, purchasing department, and Panama Railroad Company.

Under the head of construction and engineering there are the headquarters at Culebra, where are located Col. George W. Goethals, Chairman and Chief Engineer; Col. H. F. Hodges, Assistant Chief Engineer; and Civil Engineer H. H. Rousseau, Assistant Chief Engineer; the Central Division, with headquarters at Empire, presided over by Lieut.-Col. D. D. Gaillard, Division Engineer; the Atlantic Division, with headquarters at Gatun, presided over by Lieut.-Col. William L. Sibert, Division Engineer; Pacific Division, with headquarters at Corozal, presided over by S. B. Williamson, Division Engineer; and Mechanical Division, with headquarters at Gorgona, A. L. Robinson, Superintendent. The Subsistence Department, which has its headquarters at Cristobal, adjoining Colon, is under charge of Lieut.-Col. George T. Wilson. The Quartermaster's Department has its headquarters at Culebra, as does the Department of Construction and Engineering. It is under the direction of Col. C. A. Devol, Chief Quartermaster.

The Department of Civil Administration, which looks after the government of the Canal Zone, has its headquarters at Ancon, with Maurice H. Thatcher head of the department. The Department of Canal Zone Judiciary has headquarters at Ancon, and there sits the Supreme Court, of which H. A. Gudger is Chief Justice, and Thomas E. Brown, Jr., and William H. Jackson, Associate Justices. Also at Ancon is the Department of Law, of which Frank Feuille is Counsel and Chief Attorney, and William K. Jackson is Prosecuting Attorney.

The Department of Sanitation, which is of great interest to every one, has its headquarters at Ancon. At the head of this is Col. W. C. Gorgas, as Chief Sanitary Officer, and Col. John L. Phillips, Assistant Chief Sanitary Officer. The Departments of

Disbursements, with Edward J. Williams as Disbursing Officer, and of Accounts, with H. A. A. Smith as Examiner of Accounts, have their headquarters at Empire, not far from Culebra. The Purchasing Department has its headquarters in Washington, D. C. At the head of this, as Chief Purchasing Officer, is Major F. C. Boggs, with A. L. Flint as his assistant. The Department of the Panama Railroad Company not only has headquarters at Colon, under J. A. Smith as General Superintendent, but general offices at 24 State Street, New York City, in charge of E. A. Drake.

The recruiting and housing of the canal forces are looked after by the Quartermasters Department. These forces are divided into the so-called "gold" and "silver" rolls. The former consists of the officials, clerical force, construction men, and skilled artisans of the Canal Commission and the Panama Railroad, nearly all of whom are Americans. The latter include the unskilled laborers, of whom the greater part are West Indians, and the lesser number Europeans largely from Spain and Italy. The standard rate of wage for the West Indian laborer is 10 cents an hour, though those who are especially skilled get from 16 to 20 cents. The major portion of the Spaniards earn 20 cents an hour and the smaller part 16 cents. The value of the constant stock of supplies carried in the general storehouses of the Commission and the Panama Railroad is approximately \$4,500,000, while \$12,000,000 worth of supplies are purchased annually, requiring the discharge on an average of one steamer a day.

The Subsistence Department, supplying the food, clothing, and other necessities, does a business of about \$7,500,000 annually. It has 22 general stores in the villages and camps of the Canal Zone and Panama Railroad, and it is estimated that, including both employes and their dependents, 65,000 people are daily supplied with food, clothing, and other necessities. Aside from these stores there are operated at Cristobal cold storage, ice-making, bakery, coffee roasting, ice-cream, and laundry plants. Every day there leaves Cristobal, on the Atlantic side of the canal, at 4 o'clock in the morning, a supply train of 21 cars carrying ice, meats, other perishable food articles, and various supplies which, in turn, are distributed to the houses of the employes.



THE WORKERS

A Typical Labor Train

Pay Day

Station Scene at Cristobal

Dinner Time



ADMINISTRATION BUILDING (LEFT), HOUSES, AND EMPLOYEES' QUARTERS AT CULEBRA CUT ON THE RIGHT

Aside from the large hotel Tivoli, at Ancon, there are 18 hotels along the line of the canal for white, "gold," employees, at which good meals are served for only 30 cents each. Two hundred thousand meals are served on an average each month. The European laborers have some 16 messes, in which they pay 40 cents per ration of three meals. These messes average 270,000 meals a month. For the West Indian laborers 14 kitchens are operated, at which they receive a ration of three meals at 25 cents per ration. At these, 100,000 meals on an average are served monthly. If the visitor to the Canal Zone has time to study the subsistence and quartermaster departments, he cannot fail to find them interesting.

The enormous equipment of the canal for construction purposes includes approximately 100 steam shovels, 315 locomotives (aside from 70 of the Panama Railroad), 560 drills, 4,400 flat and dump cars (aside from 1,500 cars of the Panama Railroad), 20 dredges, 30 unloaders, 25 spreaders, 10 track shifters, 19 pile drivers, 57 cranes, 12 tugs, 70 barges, lighters, and scows, 14 launches, rock breakers, tow boats, drill boats, etc. Some of the old French machinery has been utilized, but the greater part of the equipment is American.

The average cost of dry excavation in the Central Division, including Culebra Cut, during 1911, was 63.37-100 cents per

cubic yard; for dredging in the sea-level sections, approximately 26 cents per cubic yard.

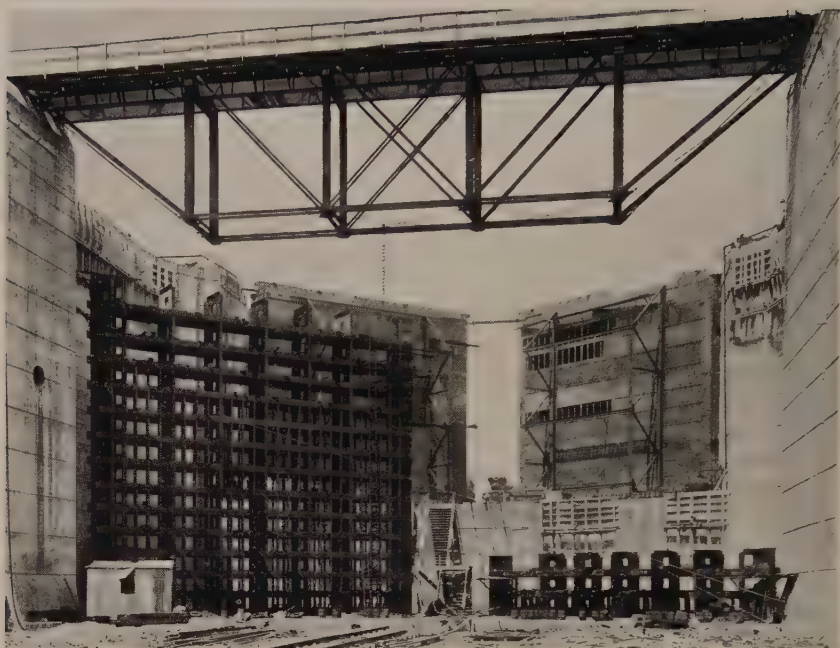
The fortifications, which will be at both entrances to the canal, will include 16-inch, 14-inch, and 6-inch rifle cannon, and 12-inch mortars of the most powerful and effective types made, aside from submarine mines. The garrison will consist of the necessary coast artillery; three regiments of infantry, with a war strength of nearly 2,000 men for each regiment; a squadron of cavalry, and a battalion of field artillery. On the Isthmus, at the present time, is a small marine and infantry garrison, whose presence is chiefly a moral influence for the maintenance of order on the Isthmus. For the construction of fortifications, \$3,000,000 have been appropriated.

Each cubic yard of average rock weighs about two tons, or 3,900 pounds; of earth, about two and a half tons or 3,000 pounds; of the mixed material of the Culebra Cut, about 3,600 pounds, or approximately a two-horse cart-load. The steam shovels or dippers, each according to size, excavate from one and three-fourths cubic yards to five cubic yards. A five-cubic yard dipper when full lifts about seven tons of earth, or nine tons of rock.

This material is carried away on trains of dump and flat cars, averaging from twenty to thirty-five cars each. The average time consumed in unloading a train of flat cars is from seven to fifteen minutes; of large dump cars, fifteen to forty minutes. The record day's work for one steam shovel was 4,823 cubic yards, or 8,395 tons. In one day 333 trains have been loaded and unloaded.

The most interesting machine used in connection with unloading the flat cars is an iron spreader, which is pulled by a cable the whole length of the train, and in a few minutes throws all the material over the side of the tracks upon the slopes of the dump piles.

The civil administration of the Canal Zone, under Maurice H. Thatcher, is an interesting feature for the visitor who has time to investigate its workings. Tom M. Cooke, the well-known Chief of Division of Posts, Customs, and Revenues, has developed an administration under these heads which he holds is the best in the world, and if one investigates them under his direction he is convinced of the truth of his claim.



WEST CHAMBER, PEDRO MIGUEL LOCK, SHOWING CONSTRUCTION OF GATES

The school system, in charge of F. A. Gause, Superintendent, will compare favorably with the best public-school system of any State of the United States.

The police system, under Capt. C. W. Barber; the fire department, under Chief C. E. Weidman; and the public works, under Supt. M. E. Gilmore, are conducted with the highest degree of efficiency.

The justice administered in the Canal Zone is about as near perfect as it can be. Although at the present time there is no jury trial, every inhabitant of the Canal Zone feels that he is living under a just and effective system of law and order. Chief Justice H. A. Gudger has had a long experience on the Isthmus, having been United States Consul to Panama before he was appointed to the judiciary.

While in a book of this kind it has been possible only to touch most briefly upon many features of the work on the canal and the administration of the Canal Zone, it can be readily seen from the facts briefly outlined here that the Canal Zone, the engineering construction, its civil government, its sanitation, etc., present a

unique example and one of the most remarkable illustrations of high efficiency to be found in the wide world. Long live Col. Goethals and his assistants!

THE WORK OF SANITATION

The perfect sanitation of the Canal Zone is one of its wonderful features. Yellow fever has been absolutely exterminated, and malaria and other tropical fevers reduced to a minimum. Perfect sewerage and water systems have been established in Panama and Colon and at other points. Swampy districts have been drained as far as possible, and other places treated with petroleum to prevent the growth and spread of mosquitoes. The hospitals are up-to-date in every respect. All hotels and houses of employes and hospital buildings are enclosed with wire netting to keep out stray mosquitoes. The one disease which causes the greatest number of deaths, but is largely confined to the Negro population, is, strange as it may seem, pneumonia; but the cases of this are being constantly reduced. A force of 1,400 men is employed in the sanitary staff, of whom about 750 are in the two terminal hospitals at Ancon and Colon.

The present health conditions on the Isthmus compare favorably with those of the most healthful cities and districts of the United States, and the death rate is lower than in the average American city. What has been accomplished can best be appreciated by conditions and incidents which the author remembers as existing and taking place when he first went to the Isthmus, in 1904, as United States Minister. Then the whole line of the Canal Zone was overgrown with heavy jungle, up through which towered the old French machinery like black specters of the past. In neither Colon nor



INSPECTION MOTOR CAR

Left to right — Col. Hodges, Congressman Fairchild, Mrs. Fairchild, and John Barrett



STREET IN ANCON HOSPITAL GROUNDS

Panama were there any waterworks or sewerage systems. The mosquitoes were everywhere a pest. Nearly everybody was afflicted with malaria, while yellow fever was beginning to kill off the flower of the young men who went down to the Isthmus in those pioneer days. In short, it may be said that discouragement and death were the dominant features of the situation. To make this more realistic, I can relate an experience of my own. One Saturday night I had ten young men who held responsible positions on the canal as my guests at dinner in the Legation. On the following Saturday we buried under the wet clay four of these splendid fellows — dead by the yellow fever.

For nearly two years, beginning early in 1904, Col. Gorgas and his staff valiantly battled against overwhelming odds to kill off the yellow fever mosquito and stop the dreaded disease which was decimating the ranks of the Americans and discouraging those who escaped its clutches. By instituting a strict quarantine against all vessels coming from yellow-fever infected ports, by doing away with all stagnant water, by fumigating houses wherever an occupant had been afflicted with yellow fever, and by

following other comprehensive sanitary measures, he finally won out, and now the mention of yellow fever suggests only unhappy memories of the past.

A word should be said here about the trained nurses and other women who have left good positions or good homes in the United States to make up the hospital staff or perform other duties in the Canal Zone. Most all of the praise for remarkable work done from the early days of pioneer sanitation and construction to the present has been given to the men with too little thought of the nurses in the hospitals, the female teachers in the schools, and the wives, daughters, and sisters who have accompanied and encouraged the husbands, fathers, and brothers. From early 1904, when Miss Hibbard, as their chief, came down with the first forces of nurses and inaugurated their work with notable unselfishness and administrative skill, until the present, the women of the canal staff have done their part with a courage, devotion, skill, and patriotism deserving of the highest praise. In the trying days of yellow fever not a single nurse showed the white feather and asked to be allowed to return to the United States, and many a splendid young engineer, surveyor, clerk, or other employe owed his life to the skillful nursing and careful attention received from these untiring women. No wonder that happy marriages have often resulted from these experiences.



HOSPITAL AND SANITARIUM AT TABOGA ISLAND, PACIFIC SIDE



LOOKING SOUTH, EAST CHAMBER, UPPER LOCK AT MIRAFLORES

In this connection, however, there should not be overlooked the force of quarantine officers, hospital doctors, and male attendants. Well and faithfully have they done and are doing their exacting duties. When the roll of honor is finally made up for valiant and faithful service from 1904 to 1915 a large number of the names must include men and women who began, built up, continued, and raised to a high standard, under the example and leadership of Col. W. C. Gorgas, the health hospital, and quarantine service and conditions of the Canal Zone.

Prominent among the present and veteran hard-working sanitary staff, aside from Col. Gorgas and Col. Phillips, are Major Robert E. Noble, General Inspector; Lieut-Col. Charles F. Mason, Superintendent Ancon Hospital; Dr. Wm. H. Bell, Superintendent Colon Hospital; Dr. J. C. Perry, Chief Quarantine Officer; Dr. Claude C. Pierce, Quarantine Officer, Colon; Dr. Fleetwood Gruver, Quarantine Officer, Panama; Joseph A. LePrince, Chief Sanitary Inspector, Ancon; and Dr. M. E. Connor, Health Officer, Colon.

WHAT THE CANAL MEANS

What does the Panama Canal mean? What does it mean to the United States, to Latin America, to Europe, to Asia, to Australia, and to all of the world?

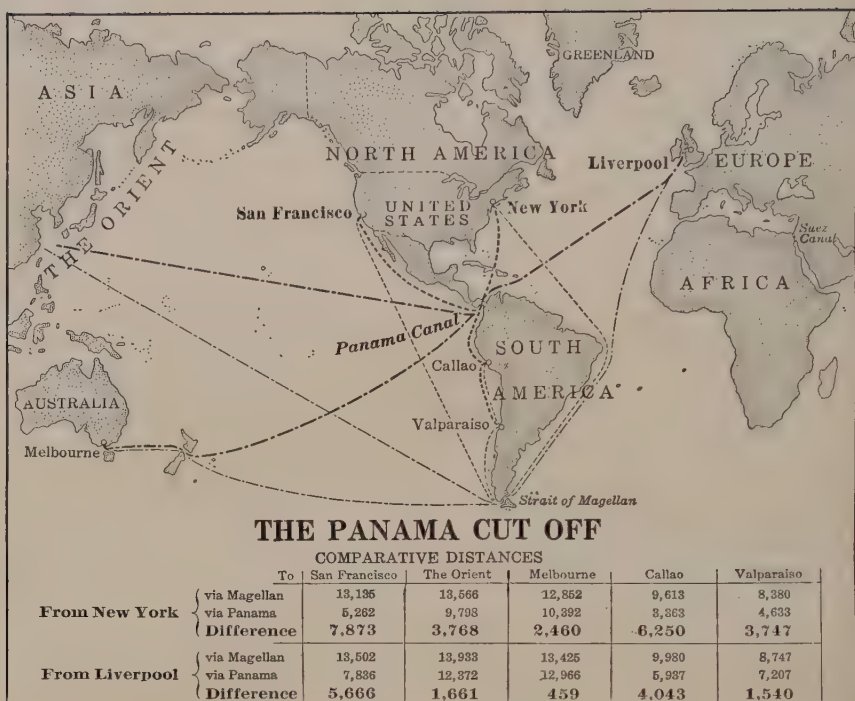
These are questions which every man interested in the progress of the world cannot fail to turn over constantly in his mind.

No other great engineering undertaking in the history of the human race, not even the construction of the Suez Canal, the building of the transcontinental railways of North America, the construction of the great wall of China, has had any such effect on the power, prestige, commerce, and opportunity of one or of a group of nations as will have the Panama Canal.

For the United States and its twenty sister American Republics the formal opening of the canal will be the solemn inauguration of a great new Pan American era of commerce, friendship, and peace. In separating North from South America with a water channel it will draw them closer together in ties of better acquaintance and larger trade.

While it will bring a quickening influence to every State and part of the United States, its most immediate benefits will be first felt upon the Atlantic, Gulf, and Pacific seaboard. Gradually the interior, especially the commercial, industrial, manufacturing, and exporting sections, and later the agricultural districts, will gain both direct and indirect advantages, until the whole land realizes that a new world commercial route is in operation. Too great changes or effects, however, must not be expected to come all at once. The real and lasting benefits to the trade and commerce of the United States will come only through the process of years and the adaptation of the business interests, not only of the United States but of foreign countries, to the new conditions of the canal. There is probability that much disappointment will be experienced in many seaports of the United States that their docks and wharves are not immediately crowded with shipping after the canal is opened. It must be remembered that water routes, though freer and less restricted than rail routes, require fleets of mercantile vessels, much capital, and large actual exchange of commodities to develop them on a big scale.

Just as a new railroad built through a sparsely settled country between two cities does not begin to do the business at first which



comes to it later on through the construction of feeders, the filling up of the country, and the growth of its terminal points, so the Panama Canal, through the extension of old steamship lines, the putting on of new lines and tramp vessels, and the building up of the countries reached by them, will increase its commerce and its shipping with eventual individual benefits to each port within the limit of its influence.

Probably the greatest good to the United States from the canal will result from the cheap, short, and quick route of water communication between its Atlantic, Gulf, and Pacific seabords. The exchange through the canal of trade and commodities between the Atlantic and Gulf States and ports on the one hand, and the Pacific States and ports on the other, should grow rapidly in quantity, volume, and value. This development should not and probably will not injure permanently the business of the transcontinental railways. On the contrary, it will so increase the prosperity, population, and business of the coast and adjacent interior States that it will develop the local trade of the railways

and that class of through business which will not be handled by slow-going vessels.

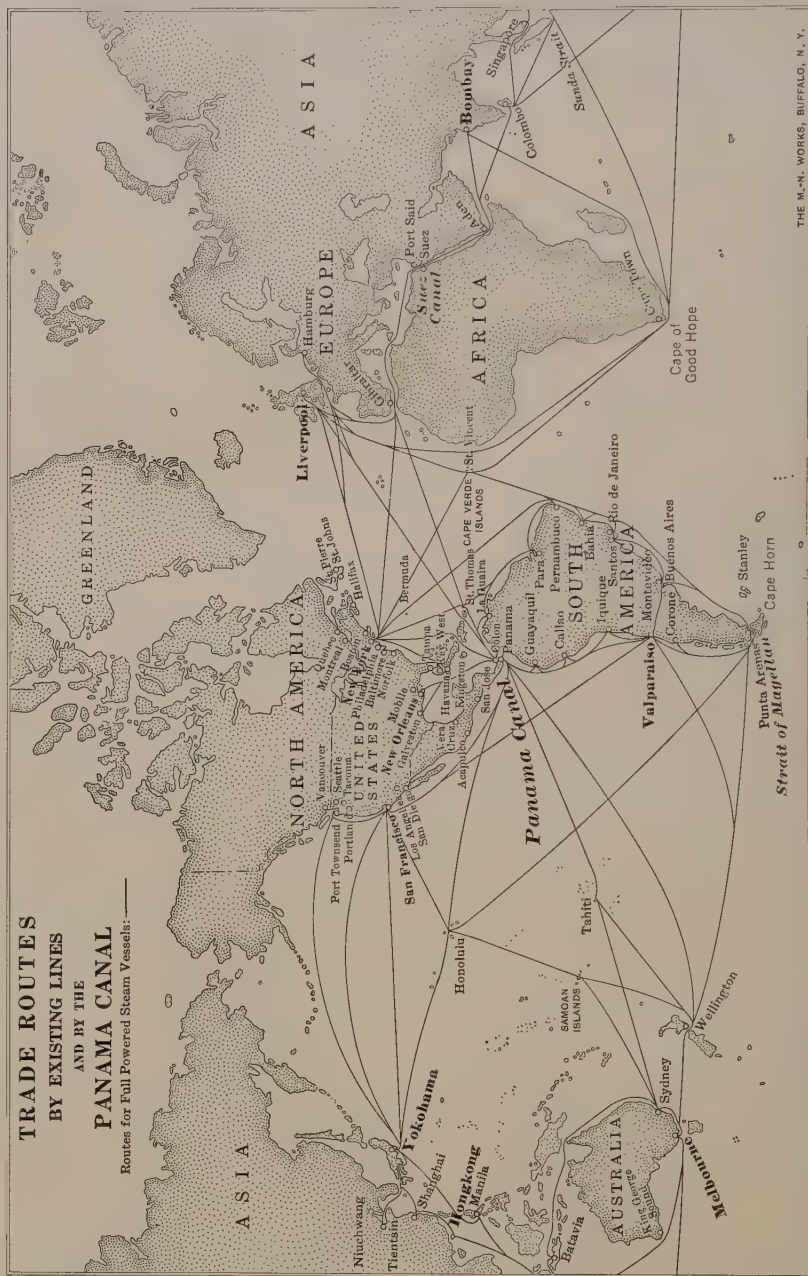
Some simple contrasts in distances between the Panama Canal and the Straits of Magellan will show at a glance what the Panama Canal means in the relations of the Atlantic, Gulf, and Pacific seaboard of the United States. By Magellan, the distance from New York to San Francisco is 13,135 miles; by Panama, 5,262 miles, a saving of 7,873 miles, or more than twice the distance across the Atlantic Ocean. From New Orleans to San Francisco, by way of Magellan, is 13,551 miles; by way of Panama, 4,683 miles, a saving of 8,868 miles, or practically a month's steaming of vessels averaging 12 knots an hour. Such figures need no further argument than themselves to illustrate the real significance and meaning of the canal.

While the shortening of the distance between the domestic ports of the United States is, perhaps, the most remarkable and important fact, the saving effected between the ports of the United States and others beyond its shores upon the Pacific is almost equally significant and impressive. A steamship bound from New York to Honolulu, using the Panama Canal in preference to the Magellan route, will save 6,610 miles; from New York to Wellington, New Zealand, 2,493 miles; to Melbourne, Australia, 2,770 miles; and to Yokahama, Japan, 3,768 miles. All these distances give also a large advantage to the Panama Canal over the Suez Canal route, but there is practically no choice in actual distance between the Panama and Suez routes in the steaming distance from New York to Hong Kong, China, and Manila, the capital of the Philippines. The South American opportunity is discussed in the following chapter.



INLAND LIGHTHOUSE ON LINE
OF CANAL

**TRADE ROUTES
BY EXISTING LINES
AND BY THE
PANAMA CANAL**
Routes for Full Powered Steam Vessels: ———



THE W. N. WORKS, BUFFALO, N. Y.

This map is to be used in connection with the table on the opposite page. For more detailed similar map see page 90

COMPARATIVE DISTANCES (IN NAUTICAL MILES) IN THE
WORLD'S SEA TRAFFIC AND DIFFERENCE IN DISTANCES
VIA PANAMA CANAL AND OTHER PRINCIPAL ROUTES

		From					
To	via	New York	New Orleans	Liverpool	Hamburg	Suez	Panama
Seattle	Magellan	13,953	14,369	14,320	14,701	15,397	4,063
	Panama	6,080	5,501	8,654	9,173	10,447	
Distance saved		7,873	8,868	5,666	5,528	4,950	
San Francisco	Magellan	13,135	13,551	13,502	13,883	14,579	3,245
	Panama	5,262	4,683	7,836	8,355	9,629	
Distance saved		7,873	8,868	5,666	5,528	4,950	
Honolulu	Magellan	13,312	13,728	13,679	14,060	14,756	4,685
	Panama	6,702	6,123	9,276	9,795	11,069	
Distance saved		6,610	7,605	4,403	4,265	3,687	
Guayaquil	Magellan	10,215	10,631	10,582	10,963	11,659	793
	Panama	2,810	2,231	5,384	5,903	9,192	
Distance saved		7,405	8,400	5,198	5,060	2,467	
Callao	Magellan	9,613	10,029	9,980	10,361	11,057	1,346
	Panama	3,363	2,784	5,937	6,456	7,730	
Distance saved		6,250	7,245	4,043	3,905	3,327	
Valparaiso	Magellan	8,380	8,796	8,747	9,128	9,824	2,616
	Panama	4,633	4,054	7,207	7,726	9,000	
Distance saved		3,747	4,742	1,540	1,402	824	
Wellington	Magellan	11,344	11,760	12,989	13,353	9,694	6,834
	Suez						
	Panama	8,857	8,272		11,944	9,205	
Distance saved		2,493	3,488	1,564	1,409	489	
Melbourne	Cape Good Hope	13,162	14,095	11,654	11,845	8,186	8,342
	Suez						
	Panama	10,392	9,813		13,452	10,713	
Distance saved		2,770	4,282	1,312	1,607	2,527	
Manila	Suez	11,589	12,943	9,701	9,892	6,233	9,370
	Panama	11,548	10,969	14,122	14,608	11,869	
Distance saved		41	1,974	4,421	4,716	5,636	
Hongkong	Suez	11,673	13,031	9,785	9,976	6,317	9,173
	Panama	11,691	11,112	13,957	14,443	11,704	
Distance saved		18	1,919	4,172	4,467	5,387	
Yokohama	Suez	13,566	14,924	11,678	11,869	8,210	7,660
	Panama	9,798	9,219	12,372	13,858	11,119	
Distance saved		3,768	5,705	694	1,989	2,909	
Panama		2,017	1,438	4,591	5,110	6,387	

THE GREAT LATIN AMERICAN PACIFIC COAST

In foreign trade and general opportunity of intercourse, acquaintance, and business, the Panama Canal means much good to the United States if it will take advantage of this new route to vast southern fields of commerce, capital, and industry yet in the infancy of their development. I refer particularly to that resourceful, remarkable, and even fascinating Pacific coast line of Latin America which reaches by the wanderings of its seaboard for nearly 8,000 miles from the California-Mexican line southwest to Panama and then directly south to Cape Horn. These are 8,000 miles of a wonderland of potentialities. Such a description is no exaggeration if based on actual facts and the knowledge of persons who look beyond mere present conditions, and who, remembering the history of the development of other parts of the world, picture ahead perfectly reasonable possibilities.

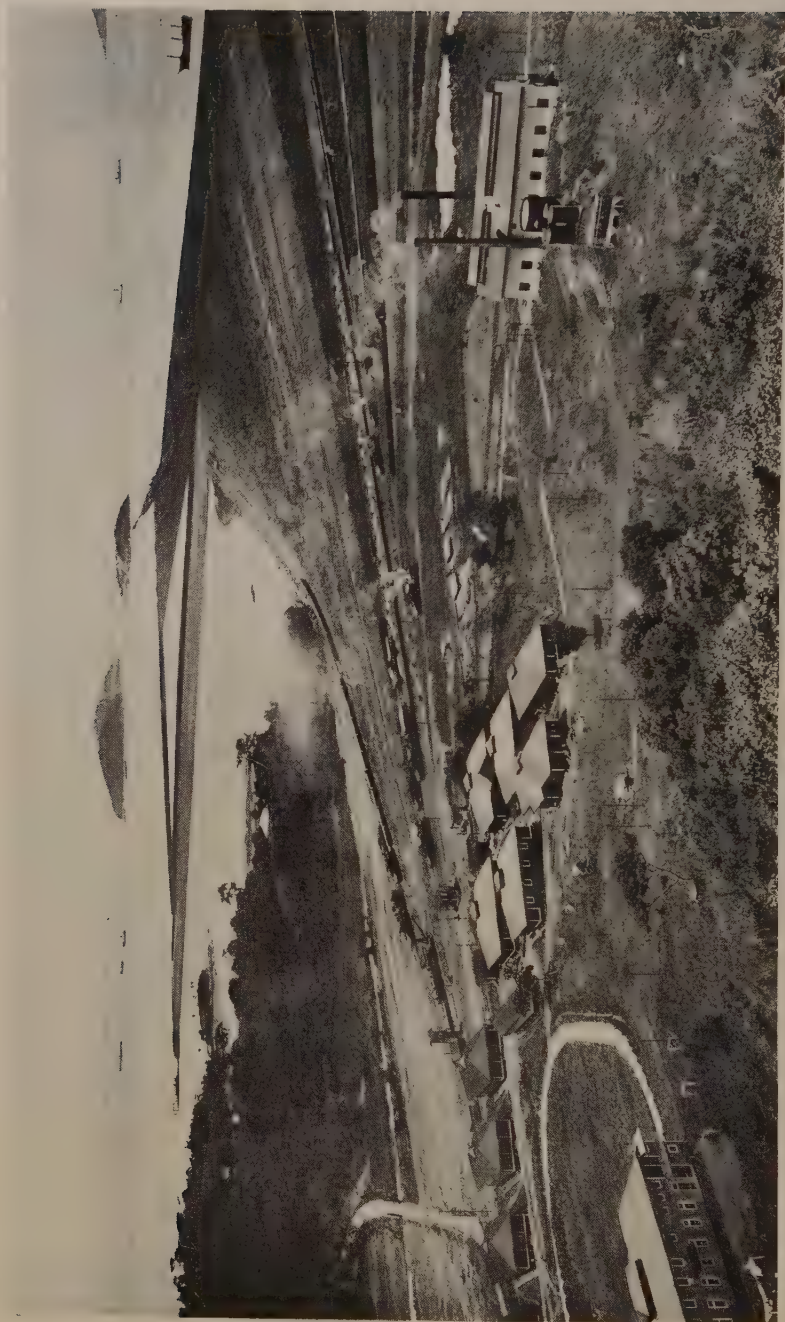
I indulge in no foolish or ill-advised prophecy when I predict that the twelve Latin American countries or their western shores bordering on the Pacific Ocean will experience in the decade following the opening of the canal a development of commerce, agriculture, industry, timber, and mineral wealth, railway construction, harnessing of water-powers, population, cities, and towns which will astonish the world and rival the development of the Pacific coast and mountain States of the United States following the completion of the transcontinental railways. It is quite logical that the Panama Canal means as much in the long run to the Pacific coast of Mexico, Guatemala, Salvador, Honduras, Nicaragua, Costa Rica, and Panama in North America, and to Colombia, Ecuador, Peru, Bolivia, and Chile in South America as it does to the United States, either in part or in whole. In other words, these countries will feel the quickening influence of the canal even before and to a greater extent than will the United States because they will secure at once direct access by a short cut to the great buying and selling markets of the United States and Europe.

The saving of the Panama over the Magellan route for vessels running not only from New York, New Orleans, and neighboring ports but from England and northern Europe to the principal ports of the west coast of South America is one of the best illustrations of the value and meaning of the canal. The first

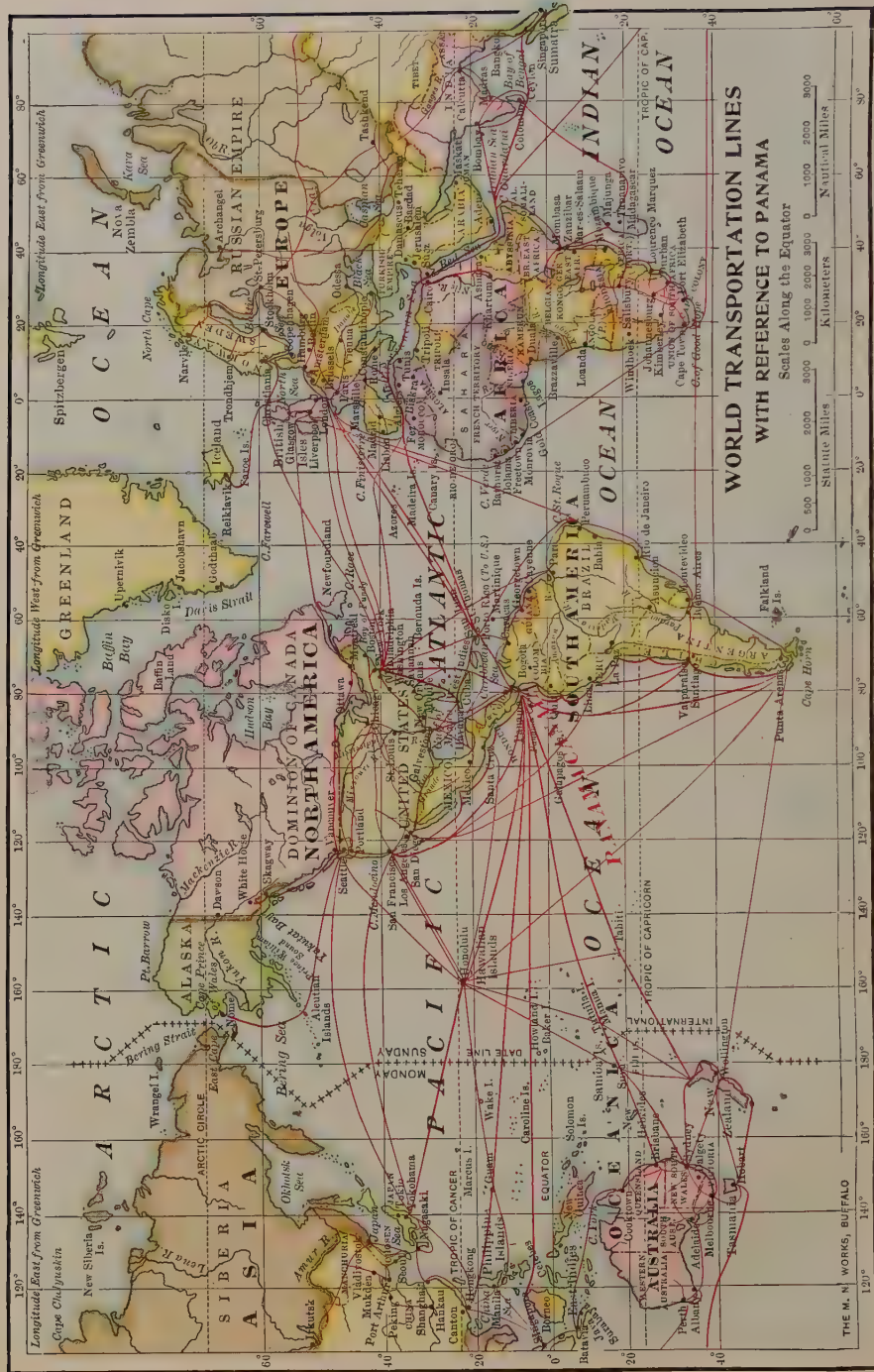
northern important port of the Pacific coast of South America is Guayaquil in Ecuador. A steamship bound from New York to Guayaquil going through the canal will be obliged to steam only 2,810 miles, instead of 10,215 miles via Magellan, a saving of 7,405 miles, or between twenty and thirty days, according to the power of the vessel. The steamship from New Orleans making this journey would save 8,400 miles; from Liverpool, 5,198 miles; and from Hamburg, 5,060 miles. Callao, the principal port of Peru and the next important port south of Guayaquil, via the canal, is only 3,363 miles from New York, or equal to about the average distance across the Atlantic Ocean from New York to England. By the Magellan route it is distant, 9,613 miles, so that the steamer going from New York to Callao via the canal saves 6,250 miles. From New Orleans the distance saved is 7,245 miles; from Liverpool, 4,443 miles; and from Hamburg, 3,905 miles.

Valparaiso, the chief port of Chile, is generally considered the principal terminal point for steamships which will go via the canal to the west coast of South America. Through its harbor, not only is the large trade of Chile reached but to some extent that of the great Argentine Republic, whose capital, Buenos Aires, is connected with Valparaiso by rail. By the canal, Valparaiso, which according to our old ideas seemed far away from New York, is only distant 4,633 miles via the Panama Canal. Although it is the nearest port of the west coast to the Straits of Magellan, it is 3,747 miles nearer New York via Panama than via Magellan. A vessel from New Orleans to Valparaiso saves via the canal 4,742 miles; from Liverpool, 1,540 miles; and from Hamburg, 1,402 miles.

There are two facts not generally appreciated in the matter of distances. On account of the curvature of the earth's surface a vessel en route from Liverpool to the Panama Canal taking the great circle route can by only one extra day's steaming, or a detour of between three and four hundred miles, include New York City as a port of call, enabling it to coal there or get additional cargo. Correspondingly, a vessel en route via Panama to Yokahama, or vice versa, by only a slight detour of less than two days' steaming can include San Diego, Los Angeles, or San Francisco as ports of call for both cargo and coal.



DUMPS AT PACIFIC END OF CANAL, SHOWING BREAKWATER IN COURSE OF CONSTRUCTION, REACHING TO NAOS ISLAND
Canal channel to the right of breakwater. On island are being constructed fortifications to guard the Pacific entrance



This map can also be compared with the table on page 85

The critic who is skeptical about the future of western Latin America and the effect upon it of the Panama Canal should consider, for example, what these countries are doing without the canal and what is their foreign commerce in their present isolated relation to the great commercial routes of the world.

Commerce is often described as the life-blood of nations. If this is true, these twelve too little known and appreciated Latin American countries bordering on the Pacific Ocean are certainly full blooded and lusty. Last year without the canal they conducted a foreign trade valued at the magnificent total of \$740,000,000. This, in turn, represents an increase of over 100 % during the last fifteen years. If the foreign trade of these countries can reach this volume without the canal, it should grow quickly and easily to \$1,500,000,000 within ten years after the canal is opened. In this present commerce, with many advantages to Europe in the shipping which comes through the Straits of Magellan, the share of the United States is \$277,000,000 or 37 %. After the canal is completed and there are new short distances between the principal ports of these countries and those of the United States, I look to see the share of the United States grow quickly to 50 % and even to 60 % of their total commerce.

This situation, however, must not be viewed selfishly. The United States should want to see all of its Latin American sister republics prosper and grow just as fast as it prospers and grows. It should strive to provide a market for their exports as much as it expects them to develop a market for its exports. The Panama Canal, therefore, should mean vast mutual benefit to all the American nations using it.

In view of the direct bearing on the meaning of the Panama Canal of the twelve Latin American countries bordering on the Pacific Ocean, let us note some further interesting facts about them. They occupy a combined area of 2,500,000 square miles, which is only a little short of the total connected area of the United States. They have a present population of 37,000,000. Their Pacific seacoast extends approximately 8,000 miles.

In this review are omitted the eight other important Latin American countries — Argentina, Uruguay, Paraguay, Brazil, Venezuela, Cuba, the Dominican Republic, and Haiti. They



PRESENT DOCKS AT BALBOA, THE PACIFIC ENTRANCE TO THE CANAL

have no Pacific seaboard but still each, directly or indirectly, will feel to a greater or lesser extent the quickening influence of the Panama Canal. Including these, all of the twenty Latin American countries occupy a total area of 9,200,000 square miles, or three times that of the United States proper, and they have a population approximately of 70,000,000. The foreign commerce last year of these twenty countries reached the magnificent total of approximately \$2,500,000,000, of which the share of the United States was about 30 %. This United States trade with all Latin America, following the opening of the Panama Canal, should rapidly grow to 50 % of the total, provided we always bear in mind the purchase of their products as well as the selling of our own.

The opening of the Panama Canal will mean that the Pacific coast of Latin America will want in increasing quantities our iron and steel manufactures; our steam and electric railway materials; our structural iron and steel; our sewing machines, typewriters, and cash registers; our cotton cloth; our wood and lumber; our flour, butter, cheese, and lard; our agricultural implements; boots and shoes; jewelry; furniture and hardware; drugs and medicines; automobiles; coal; illuminating and crude oils; news print paper; binder twine; clothing; books and maps; and numerous other articles demanded by a developing country and population.

The Panama Canal means that we will have a new route to

bring back from them in increasing quantities sugar, coffee, rubber, bananas, cocoanuts, cacao or chocolate, nitrate of soda, hides and skins, chinchilla, henequen, sisal, wool, Panama hats, ivory nuts used for buttons, tin, copper, quinine, tobacco leaf, honey, and jerked beef.

To fully understand the meaning of the Panama Canal in the relations of the United States to the countries of the west coast of South America, let us make some few comparisons as to area. The great State of Bolivia, which expects splendid results from the Panama Canal, could hold Germany, France, Italy, and Spain combined, or the States of California, Nevada, Utah, Idaho, Arizona, Oregon, and Washington. Into Chile, which has a coast line of 2,500 miles on the Pacific directly south from Panama, could be placed the State of Washington four times over or California and Montana combined. Peru, which is eagerly awaiting the opening of the canal, is equal to the combined areas of France, Germany, and Austria, or those of Texas, Nevada, Utah, Arizona, and New Mexico. Into Ecuador could be put the larger part of Italy, or the greater portion of Missouri and Arkansas. Colombia, with a resourceful coast line of 400 miles directly south from Panama, has an area twice that of the German Empire. Into it could be placed Texas, Kansas, Arkansas, and Louisiana.

Little Panama, chiefly known as the home of the canal, could take care of both West Virginia and New Jersey. Mexico could hold in its borders Germany, France, and the British Islands, or the combined area of Texas, California, Nevada, New Mexico, and Arizona. Guatemala is equal to Kentucky and New Jersey; Honduras, to Pennsylvania and Rhode Island; Nicaragua, to Vermont, Maryland, New Hampshire, New Jersey, and Massachusetts; and Costa Rica, to Maryland, Massachusetts, and Delaware.

With the opening of the Panama Canal, there will be an influx to these countries of capital and population which, acting with the more ambitious and progressive element of population already there, must bring about a new era of greater prosperity and a larger trade which will benefit not only them but all the countries doing business with them.

Having myself, as United States Minister to three Latin



PRINCIPAL BUSINESS STREET, GUAYAQUIL, ECUADOR

American capitals, and as executive officer of the Pan-American Union, carefully studied for many years the varied resources and potentialities of South America, and having made, in 1906, when I was United States Minister to Colombia, a long overland journey through the Andean Mountains, plateaus, and river valleys of Colombia and Ecuador, on the western coast of Latin America, I sincerely believe that the Panama Canal will initiate in all those countries a general movement which will have a most important bearing upon the commerce and civilization of all the world.

Considering the future of the Pacific coast of Latin America, there comes up the question of the character of the peoples controlling the policies and destinies of the countries bordering on it. From personal knowledge of them I must frankly state that I have great admiration for the quality of men who are in the forefront of the statesmanship of these governments. The high-class Chileans, Bolivians, Peruvians, Ecuadoreans, Colombians, Panamanians, Central Americans, and Mexicans are worthy of the fullest confidence and coöperation of the corresponding men of the United States. During, for example, my experience as United States Minister to Colombia, I met not only in Bogota, its capital, but in the principal towns on the Pacific side of that

country a remarkably large number of scholarly, able men, who are earnestly desirous of developing in Colombia ideal progress and stability of government. And certainly if there is any country in all Latin America entitled to get benefits from the canal it is Colombia. While my official position prevents me from discussing in any way the differences between Colombia and the United States over the Panama question, I do most sincerely hope that that issue may be soon and amicably settled in a way acceptable to this sister republic of South America.

In considering the meaning of the canal, we must also go beyond our own Pacific coast and that of Latin America and consider the whole Pacific Ocean and the countries bordering upon it. According to the latest available figures, the annual ocean-carried foreign trade of Australia amounted approximately to \$672,000,000; of China, \$568,000,000; of Japan, \$461,000,000; of New Zealand, \$196,000,000; of British Columbia, \$33,000,000; of the Pacific coast of the United States, \$154,000,000; of the Philippines, \$76,000,000; of Hawaii, \$70,000,000; of Alaska, \$31,000,000. This makes a grand total of approximately \$2,250,000,000. If we add to that the \$750,000,000 of the twelve Latin American countries bordering on the Pacific Ocean, we have a Pan Pacific foreign sea-going trade of approximately \$3,000,000,000.

Think what it means, that the day the canal is opened the whole Atlantic and Pacific seaboard of the United States and the great manufacturing and industrial central and eastern sections of the country will have, for the first time in the history of modern commerce, direct access to this vast volume of international business.

When we add to this fact, moreover, the consideration that the ports of Northern and Eastern Europe and Great Britain will, through the canal, get more direct access than they have by the Suez Canal to a considerable portion of this trade and that, in turn, Australia, the Philippines, China, Japan, Hawaii, Alaska, British Columbia, and the Pacific coast of the United States will have a new and competitive route to the Atlantic and Gulf coast of the United States, to the Caribbean countries, to the Atlantic coast of South America, and to the Eastern and Northern coast of Europe, we will realize that the Panama Canal means, indeed, the making anew of the commercial map of the world.

GET READY FOR THE PANAMA CANAL

This panorama or picture, not overdrawn, of the world's commerce as affected by the Panama Canal, should inspire not only the Government and people of the United States but of all countries directly concerned to study minutely the meaning of the Panama Canal. As there is more danger, however, that the people of the United States, because of numerous other attractions and activities, will neglect, in comparison with competing countries, the study and development of the Pan American and the Pan Pacific field through the canal, it is highly necessary that there should be inaugurated at once throughout the United States what might be termed a "*Panama Canal Movement*."

Chambers of commerce and commercial clubs, civic, social, and literary organizations, should undertake without delay a study of the canal and what it means to the prestige, the influence, and the commerce of the United States. Universities, colleges, preparatory, high, and commercial schools should make the Panama Canal a special line of study and research. They should study the history, the development, the resources, the potentialities, the peoples, the languages, of Latin America and the Pacific Ocean, in order that their students, as coming citizens of this country and of the world, can act and vote more intelligently and join in making the canal bring the greatest benefits possible to trade and society.

"*A Get Ready for the Canal Movement*," as it might also be termed, should be inaugurated from New York to San Francisco, and from Minneapolis to New Orleans. This phrase should be the slogan of all kinds of commercial, social, and educational organizations. Unless the people of the United States pursue this method and undertake these activities in relation to the Panama Canal, they will be disappointed in the results it will bring and be distanced in the competition for its benefits by the peoples and commerce of other countries.

Throughout all Latin America, throughout Europe, and throughout Australia and Asia, there is deep practical interest in the possibilities of the Panama Canal, and it is the theme of constant discussion in foreign commercial, political, and economic circles. Vast amounts of money are being expended in improving European, South American, and Asiatic harbors and steam-

ship facilities in order to take advantage of the canal from the very day it is opened. The trade agents of European manufacturers, exporters, and importers are journeying through the countries and sections reached by the Panama Canal for the purpose of finding new export and import markets.

If the United States is willing to spend approximately \$400,-000,000 in building the canal, it ought to spend a corresponding amount of energy, effort, and even money in getting ready for the canal. It should be improving its port facilities, deepening its harbors and interior waterways, and constructing vessels so that it may start even, as it were, with other countries when the canal is opened.

There is danger that we will be so satisfied with our pride in accomplishing such a great engineering feat, with our praise of the work done, and with our plans for celebrating the opening of the Panama Canal, that we will overlook or forget the practical steps necessary to get actually ready for the canal and to utilize it to fullest advantage when it is completed. We should do everything to make this opening a gala event in the history of the world and to insure a brilliant success for the Panama-Pacific International Exposition of 1915 at San Francisco, and the Panama-California Exposition at San Diego. But that celebration and those exhibitions will be like the tinkling of cymbals and the beating of drums if we do not follow up our preparations for them with even greater preparations for competition in trade and influence with the rest of the world. The Director General of the Pan American Union is urging all the Latin American countries to participate in the San Francisco and San



HARBOR SCENE, CALLAO, PERU



PLAZA IN NEW SECTION, LIMA, PERU

Diego Expositions, and it is to their credit that most of them are planning to make elaborate exhibits.

In this movement nothing can help us more than an intimate study of all the Latin American countries, an expressed appreciation of their progress and possibilities, and practical coöperation with them to bring good to them as well as to ourselves. An unselfish spirit to make the canal and exposition benefit them as well as the United States, and an avoidance of policies, preachings, and methods of relationship which will arouse their suspicions or check their desire for better acquaintance and larger exchange of trade should characterize our attitude.

For many years the Pan American Union, as an official international organization, maintained at Washington by all the twenty-one American Republics, including the United States, for the advancement of commerce comity, acquaintance, friendship, intercourse, and business among them has been doing everything in its power through its publications, special reports, and its large correspondence, to make Latin America better known, not only throughout the United States but throughout all the world, and, in turn, to make the United States better known and understood in Latin America. But this effort must be supplemented by a wide-spread Pan American movement which will reach from the controlling statesmen and leading newspapers of the country down through commercial organizations, clubs, and schools to the masses of people and rising generation. Unless this is done the great Pan American era which the opening of the Panama Canal should solemnly inaugurate will be too long delayed in its full fruition.

CONQUEST OF THE TROPICS

The Panama Canal means many great things but possibly none greater than the effect of its example in showing to the world how tropical countries can be made healthful. The successful completion of the canal is a conquest of the tropics. It demonstrates that where even most uncompromising conditions of climate and sanitation have prevailed changes can be rapidly brought about that will make them the home of contented and prosperous populations.

It is difficult to place any limit upon the good that will come to the whole tropical belt of the world from the example of American sanitary achievement on the Isthmus. The largest undeveloped areas of the Western Hemisphere are now in the heart of the tropics. In Brazil, Peru, the Guianas, Venezuela, Colombia, sections of Central America and the countries of the Caribbean are vast unused jungle areas. These under the magic touch which has been applied to Panama can be converted into great areas of production and population.

Such an evolution will not only bring immeasurable wealth and increased population to these countries of the tropics but have a most direct effect upon the commerce and trade of all the world and especially of the United States with them. The engineers and the capitalists of the United States can indulge in no more combined philanthropic and profitable effort than that of coöperating with the governments and peoples of the tropics to make these jungle districts productive and profitable. They contain a wealth of timber and minerals, and large sections possess a fertility of soil which will raise the products that are necessary for the food supply of the world.

Already some governments of tropical lands and many of their representative engineers and business men have been studying carefully what has been accomplished on the Isthmus in order to reproduce on a large scale similar methods of sanitation in their own countries.

Already, moreover, a wonderful change has come over a considerable portion of the low-lying malarial and insect-infested coast of the Gulf of Mexico and the Caribbean Sea as a result of the example set at Panama. Along the coast of Mexico, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, and Colombia



HARBOR SCENE, VALPARAISO, CHILE

hundreds of thousands of jungle acres, which are only slightly above the level of the sea, have been developed into veritable banana gardens and made healthful for the residents, not only native but from the north. The swamps are being drained, the dreaded mosquitoes killed off, yellow fever exterminated, and malaria subdued. The towns and villages along this remarkable coast-line which formerly were characterized as pest holes and only visited at the risk of health or life are now becoming model sanitary settlements.

Cuba, the Dominican Republic, Haiti, and the various islands which form the rim of the Caribbean are all being benefited to some degree by this new era of sanitation, and they are fostering its continuance in order that they may develop a greater prosperity. Not only has this influence been felt actively and practically on the Caribbean and the Gulf of Mexico, but along the entire 8,000 miles of Latin America's big Pacific coast line from northern Mexico to southern Chile. It will soon be responsible for the elimination from that coast not only of yellow fever and malaria but of the plague and other dangerous contagious diseases which are an overwhelming handicap to both commerce and progress.

The Government of Ecuador has recently requested Col. Gorgas, the health wizard of the Isthmus, to go to Guayaquil and show them how they can kill off yellow fever, which has, heretofore, always prevailed at that port and kept it from realizing the growth and prosperity which by its location it deserves. If his work there is successfully executed, and the policies undertaken

at other South American ports are continued, it will not be necessary in the future, as now, to quarantine at Panama vessels which touch Guayaquil and some other doubtful ports of the Pacific. Such a new health condition will have a most beneficial effect upon the trade and traffic of the Panama Canal.

What the engineers and doctors of the United States have accomplished at Panama may mean an entirely new future, vast wealth, and great population for that northern section of Brazil which until now has almost seemed destined forever to be a pathless jungle suited only to the growth of wild rubber. The results accomplished at Panama mean that the greater portion of the mighty Amazon Valley, with its 20,000 miles of navigable waterways, now containing only a meager population and a few cities and towns which are largely rubber-trading posts, can be, as the world's increase in population and the demands for new opportunities for mankind press upon it, converted into a garden of population and productiveness. The same experience can be enjoyed by Venezuela in the broad, resourceful valley of the Orinoco; by Colombia in its rich low-lying areas of the Magdalena, the Cauca, and the Atrato rivers; by Ecuador, Peru, and Bolivia, in the upper waters and tributaries of the Amazon which drain their eastern slopes of the Andes.



GOVERNMENT BUILDING IN SUCRE, ONE OF THE PRINCIPAL CITIES
OF BOLIVIA



CONGRESSIONAL BUILDING, SANTIAGO, CHILE

The American sanitary achievement at Panama will eventually make the Caribbean Sea an American Mediterranean with a population as active and prosperous as that which surrounds the real Mediterranean. The Panama sanitary influence will also reach Southern China, Siam, Burma, India, and the great tropical belt of Africa, bringing beneficial results to humanity and civilization which will extend down through countless ages of the future.

What a wonderful study is this meaning of the Panama Canal—when the vast extent of its influence is considered. It is probably true that the sanitation of the Isthmus, permitting the great engineering work to be done, will prove even more wide reaching in its good to the human race during the next few decades than will the actual possession of a strategic and commercial waterway uniting the two seas and permitting the passage from ocean to ocean of the mercantile and naval fleets of the world.

THE CANAL AND THE WORLD-WIDE PEACE

In these days when there is so much discussion of permanent peace among all the nations of the world, it is well to note the possible significance of the canal in relation to this world-wide peace movement. Closely associated with this thought, although it may have a strange sound at first, is the military or naval value of the canal. Remembering, however, that a distinctly military

or naval advantage of one country or group of countries may be a powerful influence for peace, the meaning of the canal in this respect is easily appreciated. In its announced policy the United States is constructing the canal for the strategic use or military protection of the country as well as for commercial advantages. By being able to move its naval fleets and squadrons rapidly from the Atlantic and Gulf coasts to the Pacific coast, or vice versa, the United States gains an extraordinary advantage from the canal, which must reduce to a minimum the possibilities or probabilities of its being engaged in war by foreign countries. This meaning of the canal reducing the chances of war, the necessary size of the United States navy, and the consequent cost of maintaining a large navy, is indeed, a vital consideration; but the influence of the canal for peace along other than military or naval lines is far more impressive.

As more commerce is developed between nations, as more travel goes back and forth between the peoples of different countries, as more intimate acquaintance grows between their representative men, as they become more dependent, one upon the other, in trade, friendship, and acquaintance, so much the less is the danger of war between them or of the development of differences which might lead to war. The canal will so directly develop the trade and travel between the commercial and political centers of the United States and Europe, on the one hand, and those of Latin America, Asia, and Australia, on the other hand, that it cannot fail to be forever a mighty and tangible argument and influence for peace.

Although the United States is fortifying the canal against the possibilities of attack, the chances that these fortifications will be forced to go into action against hostile vessels is, indeed, remote. After the canal is opened the world will soon realize that it is an absolute necessity for the commerce and general prosperity of all nations, and a world-wide public sentiment will consider it an international crime if any effort is made to destroy it.

That great apostle and philanthropic promoter of world peace, Andrew Carnegie, should rejoice that Uncle Sam, following his example, as it were, has devoted a sum almost equal to his reputed fortune to the endowment of universal peace in the practical form of a great interoceanic waterway.

PANAMA IN HISTORY

There is a real romance and charm about the history of Panama. Justice cannot be done to it in this brief outline, but some principal facts will prove interesting.

From the days, in 1502, when Columbus investigated every indentation of the Caribbean coast of Panama in search of a way through to Cathay, the Isthmus has been more frequently the center of world interest and richer in historical events than any section of the two continents it connects.

Very soon after its discovery, that narrow strip which separates the two great ocean highways of trade became the strategic point of the western world of commerce and of the provisions for the defense of Spain's monopoly. For three centuries it was the lock that guarded her vitally important treasure houses on the western hemisphere.

It was across this Isthmus that Vasco Nuñez de Balboa forced his way in 1531 through the jungle to the discovery of the Pacific Ocean. In 1516, three years later, Pedro Arias de Avila (or Pedrarias, or Davila, as he was familiarly known), and who was the Spanish governor of the colony already established on the Caribbean side, pushed forward his conquest of the country to a native fishing village on the Pacific. Here he learned that "for fishermen, the Indians said '*panamá*,'" and from that word this region, which had been known as Darien, eventually derived its name.

On the 15th of August, 1519, Pedrarias founded the old city of Panama and before long the colony assumed an importance second to none in Spain's American empire. In that city the colonial government (the Real Audiencia de Panamá) established by decree of the Emperor Charles V., dated February 26, 1538, was given jurisdiction over Nicaragua to the north and all the Spanish provinces to the south as far as the Straits of Magellan, including the Provinces of Cartagena, Peru, Chile, and what is now Argentina. Subsequently, as the various colonies became more thickly populated, this vast jurisdiction was reduced from time to time and the Audiencias of Guatemala, Lima, Santa Fé de Bogotá, Charcas (now Bolivia), San Francisco de Quito, Chile, and Buenos Aires were successively created. At last the Province of Panama was restricted to its present area, and, prior to the



RUIN OF CATHEDRAL TOWER AT OLD PANAMA

Destroyed by Morgan in 1671

securing of independence by the Spanish colonies about 100 years ago, was attached to the Viceroyalty of New Granada.

With the transformation of the great empire of the Incas into the Viceroyalty of Peru, after its conquest by Pizarro, this city of Panama became the port of transhipment of the enormous wealth in gold, silver (of near value in those days), and emeralds which were poured into Spain as a result of the spoliation of the Inca temples and the palaces of the nobility. It was also the great *entrepôt* through which the imports from the mother country were distributed among the colonies to the south. At the height of its importance, it outclassed even the Viceregal capital of

Peru in splendor and social as well as commercial activity, and was long spoken of as the richest and most luxurious city in the world — a preëminence that was to depart only with its destruction by the romantic buccaneer, Sir Henry Morgan, in 1671.

Two years afterward, in 1673, a new walled Panama was founded on the little coral peninsula below the hill of Ancon, some six miles from the old site and strongly fortified against further attacks. For nearly 200 years, until the construction of the railroad across the Isthmus (1848–1855), the old forest and palm-bordered, stone-paved highway from the capital to Porto Bello on the Caribbean side continued to be the thoroughfare over which much of Spain's commerce passed.

It was not until the eighteenth century that the flood of Peruvian treasure began gradually to subside and the importance of that golden gateway of the Spaniards began to wane. At that period, as a consequence of her deposition from European supremacy, a general lethargy had set in throughout Spain's colonies. With the increasingly insistent efforts of other powers to participate in the new-world trade, she had been forced to place an embargo upon their ships to protect her monopoly, which had long before become vested in a group of Cadiz merchants. All but four of the ports in Central and South America were closed to international traffic. The reawakening came only when the revolutionary movement spread among the provinces in the years 1809 to 1824, and the patience of the colonists, strained to the breaking point after centuries of selfish exploitation of their resources for the benefit of the Crown and its favorites, availed themselves of the opportunity afforded by the disorders caused by the Napoleonic régime in Spain to engage in a continent-wide struggle for independence.

Politically and commercially as well as geographically, Panama occupied by that time a largely isolated position, for she was then only a more or less autonomous appendage of the Viceroyalty of New Granada (which embraced what is now Colombia and part of what afterwards became Ecuador), and was denied any profitable intercourse with the capital at Bogotá by its location on a high plateau in the midst of almost inaccessible Andean ranges. Still, when out of that revolution was evolved, in 1821, Bolivar's great Colombian confederation, made up of the Provinces of

Venezuela, New Granada, and Ecuador, Panama chose to cast in her lot with that republic and became known as its Department of the Isthmus. In 1831, the year following Bolivar's death, the confederation was dissolved and out of it emerged the separate republics of Venezuela, Ecuador, and New Granada, Panama remaining with the last named.

Later, in 1858, New Granada reverted to the old name and became known as the United States of Colombia. Still later, in 1886, the name was changed to Republic of Colombia, the one by which she is now known in the family of nations. Panama continued as a department of that republic for a period of eighty-two years — from 1821 to 1903. The present republic was proclaimed on the 3d of November, 1903.

From the viewpoint of our own times and with reference to their effect on the world at large, perhaps, the most interesting events in the history of Panama since her separation from Spain are those connected with the efforts to establish a water communication through from the Caribbean to the Pacific. The search for a natural waterway was the real aim of many of the famous maritime exploits that followed immediately the discovery made by Columbus himself that the Isthmus was a barrier which barred the short route to Cathay and the spice islands of the Indies. His failure to penetrate it did not carry conviction. It seemed impossible that nature could have played such a trick as completely to close the route to these desirable places, which were then thought to be, not on the far side of another and greater ocean than the Atlantic, but only a short distance beyond the new land which had been found. Several of the early cartographers, selecting the narrow strip at Panama, actually went so far as to depict an imaginary "Strait of Panama" on their maps. One was shown by Waldseemüller, for instance, on the map he published in 1507.

Columbus's former shipmate, Vicente Yáñez de Pinzón, sought such a strait from the Amazon to Florida. Juan de la Cosa and Amerigo Vespucci were disappointed to find that neither the Gulf of Urabá (Darien) nor the Atrato River disclosed it. Juan de Solis was in search of it when he was killed by the natives in the Rio de la Plata. From Newfoundland to the Gulf of Mexico the Cabots tried to beat the Spaniards through by way



PRESIDENT TAFT INSPECTING WORK ON THE LINE OF THE CANAL

of some northern passage. In 1524 the Florentine Giovanni de Verrazano, sailing under the patronage of Francis I. of France, tried the Chesapeake, which for a space bore the name "Mare Verrazano" in his honor, and Jaques Cartier in 1534, and afterwards other Frenchmen, explored the St. Lawrence. For the Dutch, Henry Hudson essayed the river that was named for him. From 1553 to 1612, the Englishmen Willoughby, Thorne, Sir Martin Frobisher, Sir Humphrey Gilbert, John Davis, and Captain John Smith continued the quest. Even the Jamestown colonists of 1607 were directed to seek it by way of the rivers in that region.

Meanwhile Magellan had found a way through at the southern end of the continent to the south and sailed across the Pacific, but it was thousands of miles from the Isthmus and so narrow and so near the stormy Antarctic Sea that it was too perilous for general commercial use before the days of modern shipping. And so, after all this labor and many lives had been sacrificed in vain, it was found that if there was to be a short and practicable means of communication between the Atlantic and Pacific by water it must be cut through by the hand of man.

Naturally it was the Isthmus of Panama that was chiefly centered upon as the most available site for the undertaking. It is amusing, however, to read that more than a century before this conclusion was reached a governor of the province (Pascual de Audagoga), amazed by a decree of Charles V. ordering a survey of the country between the Chagres River and the South Sea (as Balboa had dubbed the Pacific), had admonished the emperor that the project could only have been advised by a man of scanty intellect, for no prince, however powerful he might be, was capable of accomplishing a union between the two oceans in a region so mountainous and wild!

This spirited reply seems to have put a quietus on the plan for an Isthmian Canal so far as Spain was concerned. Afterwards, at various times, England and France manifested great interest in it, but the government of the United States, apparently, did not begin to consider the matter until 1835. On the 3d of March of that year, at the instance of Henry Clay, the Senate, by resolution, requested President Jackson to take under advisement the expediency of negotiating with New Granada and the Central



FAMOUS CHAGRES RIVER AT FLOOD WITH WRECK OF
OLD FRENCH DREDGE

American republics respecting such a canal, and the President commissioned Mr. Charles Biddle to investigate and report as to the availability of the various routes.

Nothing came of this at the time, nor until attention was directed again to the project in 1846, when, by the settlement of the northwest boundary dispute with England, and as a result of the Mexican war, the United States came into possession of Oregon, California, and the territory north of the Rio Grande. Then, impressed by the need of making these new possessions more accessible from the Eastern States, Messrs. Aspinwall, Stephens, and Chauncy, all North Americans, secured from the New Granadan government, in 1848, a franchise to construct a railroad between the town of Colon (for a time called Aspinwall) and the city of Panama. In the year following, the gold rush of the "Forty-niners" to California added impetus to the work and the new land route, now the famous Panama Railroad, was opened to general traffic in 1855. But still in the United States the great waterway project hung fire. President Grant's message to Congress on the subject, in 1869, brought forth no more definite action than a resolution providing for an exploration of the Isthmian route by officers of the navy, and later, in 1872, authority for the creation of a commission to consider the reports.

In May, 1876, however, Colombia granted a concession for the construction of the canal by way of Panama to Lieut. Lucien Napoleon Bonaparte Wyse, an officer in the French army. This

concession Lieut. Wyse sold to a group of French financiers, who, because of the prestige he had acquired by reason of his brilliant success at Suez, persuaded Count Ferdinand de Lesseps to join them as chief engineer. De Lesseps went out to the Isthmus in 1879, and, having gone over the ground with his experienced eye, pronounced in favor of the undertaking and determined on the course between Colon and Panama City over which the United States Government was afterwards to undertake the completion of the canal. Early in 1881 these Frenchmen organized La Compagnie Universelle du Canal Interocéanique (known also as the Panama Canal Co.), to own the concessions and carry through the undertaking.

In 1889, after eight years of active work, this company went into bankruptcy and a new one that succeeded it in 1894 was enabled to resume operations only to an extent sufficient to keep alive its franchise.

On the 18th of November, 1901, the now famous Hay-Pauncefote Treaty was concluded between the United States and Great Britain, and proclaimed February 22, 1902. It was intended to supersede the Clayton-Bulwer treaty signed in 1850 (when the two governments were contemplating a joint interest in American canal projects) and to facilitate the construction of a canal over any expedient route, and "to remove any objection which may arise out of the Convention of 19th April, 1850, commonly called



OLD FRENCH DUMP CAR THROUGH WHICH HAS GROWN A LARGE BANYAN TREE

the Clayton-Bulwer treaty, to the construction of such canal under the auspices of the Government of the United States, without impairing the 'general principle' of neutralization established in Article VIII of that Convention."

As the Hay-Pauncefote treaty has been involved recently in serious diplomatic discussion between its signatories, the United States and Great Britain, arising out of the former's proposed tolls for the Panama Canal, the clauses of that treaty involved in the discussion are given below:

ARTICLE III: "The United States adopts, as the basis of neutralization of such ship canal, the following rules, substantially as embodied in the Convention of Constantinople, signed the 28th October, 1888, for the free navigation of the Suez Canal, that is to say:

"1. The canal shall be free and open to vessels of commerce and of war of all nations observing these Rules, on terms of entire equality, so that there shall be no discrimination against any such nation, or its citizens or subjects, in respect of the conditions or charges of traffic, or otherwise. Such conditions and charges of traffic shall be just and equitable."

ARTICLE IV: "It is agreed that no change of territorial sovereignty or of the international relations of the country or countries traversed by the beforementioned canal shall affect the general principle of neutralization or the obligation of the High Contracting Parties under the present Treaty."

In 1902, under the administration of President Roosevelt, the Government of the United States, which had become more than ever interested and had had under consideration the construction of a canal through Nicaragua, concluded to take up the work in Panama if satisfactory arrangements could be made with the French company for the acquiring of its rights. As a result of the report of a commission of which Admiral John G. Walker was chairman, Congress, by the act of the 28th of June, 1902, known as the "Spooner Act," authorized the purchase, provided the French company would sell out for a sum not exceeding \$40,000,000 and that arrangements could be made with Colombia for the control of the right of way; otherwise, the alternative route (Nicaragua) recommended by the "Walker Commission," should be adopted.

It was pending these negotiations, on the 3d of November, 1903, that Panama declared her separation from Colombia and became an independent republic. W. I. Buchanan, the eminent Latin American authority, was named special United States envoy to Panama, and P. Bunau-Varilla, first Minister of Panama to Washington. On the 28th of November, 1903, the French company having agreed to sell for the stipulated price, the Hay-Bunau-Varilla treaty between the new republic and the United States was signed. It was promulgated on the 26th of February, 1904. Under its terms \$10,000,000 was paid to the government of Panama for the right of way and an annual rental of \$250,000 agreed upon, to begin nine years after date. The United States guaranteed the independence of Panama and secured absolute control over what is now known as the Canal Zone, a strip of land ten miles wide extending from Colon to Panama City, through the center of which runs the course of the great waterway. The French company's franchise and property rights were purchased at the figure stated in the act of Congress and the formal transfer to the United States was made on the 4th of May, 1904.

Six days after the promulgation of the treaty President Roosevelt, acting under authority of the Spooner Act, appointed the body known as the Isthmian Canal Commission to have charge of canal construction. The appointment was confirmed by the Senate on the 3d of March, 1904. Of the seven members of which it was composed, Rear-Admiral John G. Walker (the same



OLD FRENCH CARS AND MACHINERY

who had served on the earlier commission) was made Chairman and Maj.-Gen. George W. Davis, Civil Governor of the Canal Zone. They reached the Isthmus on the 17th of May and two days later, by an appropriate proclamation, took formal possession in the name of the United States. On the 1st of June, 1904, John Findley Wallace, formerly general manager of the Illinois Central Railroad, was appointed Engineer in Chief and repaired at once to the Isthmus. There also went Col. W. C. Gorgas, who had been health officer at Havana, Cuba, during the occupation by United States troops following the Spanish war, and, with the preliminary operations on the canal itself, the all-important work of sanitation was begun.

In the fall of 1904, when I was United States Minister to Panama, William H. Taft, then Secretary of War, visited the Isthmus accompanied by William Nelson Cromwell and Charles E. Magoon for the purpose of adjusting many delicate and important questions which had naturally arisen between the Government of Panama and that of the Canal Zone. These three assisted by Governor Davis and myself held numerous conferences with President Amador Guerrero of Panama and the members of his cabinet until all questions at issue were satisfactorily settled. In these discussions the great tact, amiability, and judgment of Mr. Taft were most potent factors for a harmonious agreement.

The Commission was reorganized by executive order of April 1, 1905. In the new personnel, Theodore P. Shonts became Chairman of the Commission, and John F. Wallace was appointed Chief Engineer and Charles E. Magoon, Civil Governor. The other four members were Admiral Mordecai T. Endicott, Gen. Peter C. Haines, Col. Ernst, and Benjamin M. Harrod. On the 28th of June of the same year, Mr. Wallace resigned and was succeeded by John F. Stevens, who entered upon his new duties on the 1st of July, 1905. Later, by order of March 4, 1907, he was made Chairman of the Commission in the place of Mr. Shonts, who had resigned, and Col. George Washington Goethals, of the Army Engineer Corps, was appointed to the vacancy. Mr. Stevens, in turn, resigned on the 3d of March, 1907, whereupon the Government determined to take over the work itself, and on the 1st of April, 1907, Col. Goethals was

appointed Chairman and Chief Engineer. By a further order, dated the next day, he was also made Civil Governor of the Canal Zone. Other appointments to the Commission included Col. H. F. Hodges, Lieut.-Col. D. D. Gaillard, Lieut.-Col. William L. Sibert, Civil Engineer H. H. Rousseau of the navy, Col. W. C. Gor-gas, Maurice H. Thatcher, and Joseph Bucklin Bishop, Secretary.

On August 24, 1912, the "Panama Canal Act" (see also page 48) was approved, providing for its opening, maintenance, operation, and protection, also that "no tolls shall be levied on vessels engaged in the coastwise trade of the United States." On the 13th of November, 1912, President Taft, under the authority conferred by the act, issued a proclamation fixing the rates to be paid by other vessels as follows:

"1. On merchant vessels carrying passengers or cargo, one dollar and twenty cents (\$1.20) per net vessel ton—each one hundred (100) cubic feet—of actual earning capacity.

"2. On vessels in ballast, without passengers or cargo, forty (40) per cent. less than the rate of tolls for vessels with passengers or cargo.

"3. Upon naval vessels, other than transports, colliers, hospital and supply ships, fifty (50) cents per displacement ton.

"4. Upon army and navy transports, colliers, hospital, and supply ships, one dollar and twenty cents (\$1.20) per net ton, the vessels to be measured by the same rules as are employed in determining the net tonnage of merchant vessels."



ELECTRIC LOCOMOTIVES TOWING STEAMSHIP THROUGH LOCKS



NEW BUILDING AND HOME OF THE PAN AMERICAN UNION
IN WASHINGTON, D. C., U. S. A.



JOHN BARRETT

Director General of the Pan American Union



FRANCISCO J. YÁNES

Assistant Director of the Pan American Union

A FINAL WORD

The perusal of these pages may perchance awaken the reader's interest in the countries, peoples, and possibilities of Central and South America and of the other Latin American nations bordering on the Caribbean Sea and Gulf of Mexico, which, with the United States, are the constituent governments forming and maintaining the Pan American Union. If so, he is requested to get in touch with that organization at its headquarters in Washington and secure additional publications or information concerning Latin America. If he comes to Washington, he is invited to visit its beautiful home, sometimes described as a "palace of peace and temple of commerce," which is both a monument to the great principle of Pan Americanism and the home of a practical office for the development of international trade and comity.

The Pan American Union and its staff of commercial experts, statisticians, translators, compilers, and editors, prepares reports descriptive of the resources, products, foreign trade, material, and educational conditions of all the Latin American countries, and publishes a monthly bulletin, with editions in English, Spanish, Portuguese, and French, which is in fact an illustrated magazine of Pan American progress. On application, a list of all of its publications will be provided to the person asking for them or forwarded to his address. If it is desired to secure extra copies of this handbook on the Panama Canal, or to send them to other persons, they can be obtained for one dollar a copy, postage prepaid, by addressing "Publicity Department, Pan American Union, Washington, D. C., U. S. A.," marking the envelope "Panama Handbook." As only a limited number of copies is printed, orders should be sent in as soon as possible.

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